

FINAL

**PERFLUORINATED COMPOUNDS PRELIMINARY ASSESSMENT
SITE VISIT REPORT**

**NEW YORK AIR NATIONAL GUARD
STEWART AIR NATIONAL GUARD BASE
NEWBURGH, NEW YORK**



Prepared For:

**Headquarters Air National Guard
Joint Base Andrews, Maryland**

March 2016

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Prepared For:

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Prepared By:

**BB&E, Inc.
March 2016**

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LIST OF ACRONYMS

AFFF	Aqueous Film Forming Foam
amsl	above mean sea level
ANGB	Air National Guard Base
AOC	Area of Concern
BB&E	BB&E, Inc.
bgs	below ground surface
FD	fire department
ft	feet
FSS	fire suppression system
FTA	Fire Training Area
gal	gallons
HEF	high expansion foam
NYANG	New York Air National Guard
OWS	oil/water separator
PA	Preliminary Assessment
PFCs	Perfluorinated Compounds
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
PHAL	Provisional Health Advisory Levels
SI	Site Investigation
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

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1.0 INTRODUCTION

A preliminary assessment (PA) site visit was conducted by BB&E, Inc. (BB&E) on December 8, 2015 for the New York Air National Guard (NYANG) at the Stewart Air National Guard Base (ANGB) in Newburgh, New York (Base). The site location is shown on Figure 1. The purpose of the visit was to identify potential sites of historic environmental releases of perfluorinated compounds (PFCs), specifically from Aqueous Film Forming Foam (AFFF) usage and storage, as shown on Figure 2. Prior to the site visit, BB&E conducted research of any documented Fire Training Areas (FTAs) in operation since 1970, or any other use or release of AFFF in accordance with the Final PFC Preliminary Assessment Work Plan (BB&E, 2015).

Individuals contributing to this PA effort included the following:

- Capt. Nicolas Caputo – NYANG, Environmental Manager
- Chief Bell – NYANG, Fire Department
- NYANG Base Civil Engineering

Sections 2.0 and 3.0 outline the potential PFC sources identified on the Base property during the records review and site visit and Section 4.0 provides conclusions and recommendations; references are listed in Section 5.0. Representative photos of the subject sites taken during the site visit are attached as Appendix A, records of communication are included in Appendix B, and other supporting documentation is provided in Appendix C.

1.1 Hydrogeologic Setting

Hydrogeologic information was obtained from the 2015 Final Preliminary Assessment/Site Investigation (PA/SI) report prepared by AECOM (AECOM, 2015).

The surficial aquifer at Stewart ANGB consists of a uniform glacial till deposit over the shale bedrock. The shallow portion of the bedrock aquifer that lies beneath the installation is confined by the glacial till. The Normanskill Formation and underlying bedrock have very low permeability and yield low volumes of groundwater. Groundwater at the site is approximately

30 feet (ft) below ground surface (bgs) and flows to the southeast. Three possible modes of groundwater transport through two hydrogeologic units have been identified onsite:

- Perched water moving horizontally along the top of the bedrock, primarily through a weathered rock zone at a rate of about 1.6 ft/year.
- Vertical and horizontal movement through pores in the sandier zones of a glacial till unit overlying the bedrock, at a rate of approximately 13 ft/year.
- Vertical and horizontal movement along fractures in the till unit.

There are currently no known drinking water supply wells at the Base. The Town of New Windsor provides water service to the Stewart ANGB and vicinity and obtains water from Lake Washington (AECOM, 2014).

Further discussion of water wells is included in Section 3.2.1.1 of this report. Surface water drainage is discussed in Section 3.2.4 of this report.

2.0 FIRE TRAINING AREAS

FTA Areas of Concern (AOCs) are sites where AFFF has been released during fire training activities. Based on this PA investigation, there is no evidence that a FTA has been used by ANG within property boundaries. According to Base personnel, all fire training activities have been conducted at off-Base facilities.

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3.0 NON-FIRE TRAINING AREAS

Non-FTA AOCs are sites where AFFF has been released and may include crash sites, hangars, fuel spill areas, hazardous waste storage facilities, firefighting equipment testing areas, etc. The following section includes a description of any non-fire training AOCs, operational history, waste characteristics, and pathway evaluations.

3.1 AOC Description, Operational History, and Waste Characteristics

The following are the Non-FTA AOCs that were identified during this PA Investigation. Appendix A contains photos of these areas. The types of AFFF used and stored in the areas specified below included the following: Ansulite Mil-spec (3%) and Ansul Class A (1%).

3.1.1 Building 104 (Current Fire Station)

Building 104 was built in 2007. Bulk AFFF is stored in totes and drums and is also present in the fire department (FD) vehicles. Current FD vehicle AFFF inventory amounts are included as Appendix C-1. Additionally, the foam trailer currently carries 1,000 gallons (gal) of AFFF. AFFF is transferred to vehicles within the Fire Station via a pony pump on the foam trailer. If AFFF is removed from the trucks for maintenance, it is transferred to empty 55-gal drums within the Fire Station. Any AFFF releases are typically captured by the trench drains which discharge into the storm sewer system, ultimately flowing through an oil/water separator (OWS) at Building 111. Discharges from the OWS (Building 111) are typically routed to Recreation Pond (off-site) through Outfall 002, but can be diverted to the Retention Basin through the Diversion Chamber (see further discussion in Section 3.1.15). A project is currently being investigated by the Base to re-route the Building 104 trench drains from the storm sewer system (ANG, 2015).

3.1.2 Nozzle Testing Area

According to Base personnel, the concrete area west of Building 104 has been used for annual FD vehicle nozzle testing since 2007 and is the only known location of nozzle testing. No records of nozzle testing were available. Cracks in the concrete were observed during the site visit.

3.1.3 *Building 105 (Former Fire Station)*

Prior to relocation to Building 104 in 2007, the FD was stationed in Building 105 (built in 1988). No known Base personnel were identified during the site visit that would have a recollection of AFFF handling and usage within Building 105, but practices are presumed to be similar to those of Building 104. Trench drains were located on either end of the truck bays, near the overhead doors. There are no known records or personnel knowledge of AFFF releases at Building 105. Any releases within Building 105 would have been captured by the trench drains, which discharge into the industrial waste line. It is not known if vehicle nozzle testing was conducted outside of Building 105 during FD occupancy.

3.1.4 *Hangar 100*

Operation of the AFFF fire suppression system (FSS) at Hangar 100 started in 1987 and continued until 2006, when the system was retrofitted for use of high expansion foam (HEF). Prior to removal, three AFFF supply tanks (unknown capacity) for the fire suppression system were located in the boiler room. It is not known if, or how often, fire suppression systems were tested. No records of accidental AFFF releases exist, but according to Base personnel, at least one accidental release occurred at Hangar 100. A 1990 article from The Sentinel (Appendix C-2) describes an AFFF spill from Hangar 100 that discharged directly into New Windsor's sanitary sewer system, generating plans to construct a second lagoon within the Retention Basin system. Any AFFF releases at Hangar 100 typically would enter the trench drain and building OWS through the industrial waste system and discharge to the Retention Basin (ANG, 2015) (see further discussion in Section 3.1.15). Hangar 100 construction drawings of the FSS conversion from AFFF to HEF are included in Appendix C-3.

3.1.5 *Hangar 101*

Operation of the AFFF fire suppression system at Hangar 101 started in 1987 and continued until 2009, when the system was retrofitted for use of HEF. The AFFF FSS included underwing and overhead foam generators. The existing overhead foam generators were retained for reuse with HEF. Historically, AFFF storage tanks were kept on the floor of the main hangar. It is not known if, or how often, fire suppression systems were tested. No records of accidental AFFF releases exist. According to Base personnel, several accidental AFFF FSS activations occurred at

Hangar 101 but never resulted in a full-system release. Trench drains in this hangar discharge to an OWS through the industrial waste system to the Retention Basin (ANG, 2015) (see further discussion in Section 3.1.15). Hangar 101 construction drawings of the FSS conversion from AFFF to HEF are included in Appendix C-3.

3.1.6 Hangar 102

Operation of the AFFF fire suppression system at Hangar 102 started in 1988 and continued until 2006, when the system was retrofitted for use of HEF. The existing overhead foam generators were retained for reuse with HEF. Two AFFF supply tanks (1,800 gallons [gal] and 700 gal) for the FSS were located in the Electrical and Fire Protection Equipment Room (Room 115). Staining on the floor and walls was observed in Room 115 during the site visit, potentially due to an AFFF or HEF release (Appendix A, Photo 12). There are no floor drains in Room 115, but an overhead door is located near the FSS which may facilitate an outdoor release of foam if opened during FSS activation. No records of accidental AFFF releases exist. According to Base personnel, several accidental AFFF FSS activations occurred at Hangar 102 but never resulted in a full-system release. It is not known if, or how often, fire suppression systems were tested. Trench drains, located in the hangar bay, discharge to an OWS through the industrial waste system to the Retention Basin (ANG, 2015) (see further discussion in Section 3.1.15). Hangar 102 construction drawings of the FSS conversion from AFFF to HEF are included in Appendix C-3.

3.1.7 Hangar 300

Operation of the AFFF fire suppression system at Hangar 300 started in 1989/1990 and continued until 2004, when the system was retrofitted for use of HEF. One 1,800-gal AFFF supply tank was located in the Sprinkler/Mechanical Room. It is not known if, or how often, fire suppression systems were tested. No records of accidental AFFF releases exist. Any AFFF releases during testing or accidental release within the Hangar typically would have been routed to the trench drains, which discharge to an OWS through the industrial waste system, ultimately to the Retention Basin (ANG, 2015) (see further discussion in Section 3.1.15). Hangar 300 construction drawings of the FSS conversion from AFFF to HEF are included in Appendix C-3.

3.1.8 Hangar 301

Operation of the AFFF fire suppression system at Hangar 301 started in 1992 and continued until 2004, when the system was retrofitted for use of HEF. Two 1,300-gal AFFF supply tanks were located in the Mechanical Room. It is not known if, or how often, fire suppression systems were tested. No records of accidental AFFF releases exist, but according to Base personnel, at least one accidental release occurred at Hangar 301. This maintenance facility is on the flight line and is used by the USMC MAG 49, Det B for maintenance of aircraft fuel cells and for the washing and corrosion control of aircraft. Trench drains in this hangar discharge to an OWS through the industrial waste system to the Retention Basin (ANG, 2015) (see further discussion in Section 3.1.15). Hangar 301 construction drawings of the FSS conversion from AFFF to HEF are included in Appendix C-3.

3.1.9 Building 108 (Pump House)

Building 108, built in 1988, was a historical AFFF storage location according to Base personnel. The dates and amounts of AFFF stored are unknown. No records of accidental AFFF releases exist. According to base personnel, there were no known spills. Building 108 floor drains discharge via the storm sewer system to Outfall 006.

3.1.10 Building 200 (AGE Maintenance)

Building 200, built in 1988, consists of vehicle maintenance bays and a washrack. Maintenance bay floor drains lead to an OWS prior to discharge to the sanitary sewer system. During equipment washing at the washrack, a valve-operated trench grate system is opened and discharges flow to the sanitary sewer system via an OWS. Although there are no records or knowledge of known AFFF spills at Building 200, Base personnel indicated that spills may have occurred due to residual foam in the lines of FD vehicles.

3.1.11 Apron

This area is on the west side of the flight line and is used for parking, fueling, deicing, and minor maintenance of C-17 and KC-130 aircraft. This area is completely paved and covers approximately 75 acres. The apron has a complete network of drain inlets that discharge

stormwater through the storm sewer system to Outfall 002. During normal flow conditions, drainage from the aircraft parking apron goes through the Diversion Valve Chamber, an underground vault located at the southwest corner of the Base, which includes a large filtration system and control equipment. If a spill occurs or the storm water system is threatened with contaminants, the drainage from the aircraft parking apron is redirected at the Diversion Valve Chamber and diverted to the Retention Basin. Flow diversion is accomplished by electronically activating a control valve remotely from Bldgs. 207 or 104 or manually at the Diversion Chamber (ANG, 2015).

3.1.12 Outfall 002

The drainage basins of the Base discharge through a network of in-ground conveyances and grass-lined ditches to the Recreation Pond or through several points along the eastern border of the Base. There are ten drainage basins that contain the industrial activities of the Base. These basins generally slope from northwest to southeast and are summarized below (ANG, 2015). Each drainage basin has an associated outfall. Drainage Basin 002 includes a portion of Building 101, Buildings 100,104, 200, 301, 302, 400 and Apron which drain through Outfall 002 (ANG, 2015).

3.1.13 Outfall 003

The drainage basins of the Base discharge through a network of in-ground conveyances and grass-lined ditches to the Recreation Pond or through several points along the eastern border of the Base. There are ten drainage basins that contain the industrial activities of the Base. These basins generally slope from northwest to southeast and are summarized below (ANG, 2015). Each drainage basin has an associated outfall. Drainage Basin 003 includes a portion of Building 101, 102, 105, 106, 107, 1107, 113, 202, 203, 204, 205, 206, 207, 208, 209, 211, 214, 300, 301, and 302 which drain through Outfall 003 (ANG, 2015).

3.1.14 Outfall 006

The drainage basins of the Base discharge through a network of in-ground conveyances and grass-lined ditches to the Recreation Pond or through several points along the eastern border of

the Base. There are ten drainage basins that contain the industrial activities of the Base. These basins generally slope from northwest to southeast and are summarized below (ANG, 2015). Each drainage basin has an associated outfall. Drainage Basin 006 includes Building 108 which drains through Outfall 006 (ANG, 2015).

3.1.15 Retention Basin

The Retention Basin is composed of two lined depressions, known as lagoons to Base personnel. The eastern lagoon was built in 1986 and the western lagoon was built in 1992. Both were relined in 2011. As discussed in Section 3.1.11, if a spill occurs or the storm water system is threatened with contaminants, drainage from the aircraft parking apron is redirected at the Diversion Valve Chamber and diverted to the Retention Basin. Additionally, all releases from Base buildings enter their respective OWSs prior to discharge into the Retention Basin via the industrial waste system. According to Base personnel, AFFF releases on the Apron may have been directed to Recreation Pond or to the Retention Basin; AFFF releases in the hangars were redirected to the Retention Basin and were either disposed off-site or trickled into the sanitary sewer system, as referenced by a 1990 news article (Appendix C-2).

3.2 Pathway and Environmental Hazard Assessment

The following is a preliminary evaluation of the threats and targets associated with each exposure pathway. In their anionic forms, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) are water soluble and can migrate readily from soil to groundwater. The United States Environmental Protection Agency (USEPA) has established Provisional Health Advisory Levels (PHALs) for PFOS and PFOA in soil (USEPA, 2014). The primary exposure pathway for PFOS and PFOA would be the ingestion of contaminated drinking water.

3.2.1 Groundwater

No documentation was available showing that groundwater at the Base has been tested for PFCs; therefore it is unknown whether PFCs are present in the groundwater. Based on historical practices, they may be present in the groundwater due to known or potential AFFF use at

Building 104 (Current Fire Station), the Nozzle Testing Area, Building 105 (Former Fire Station), Hangar 100, Hangar 101, Hangar 102, Hangar 300, Hangar 301, Building 200 (AGE Maintenance), and the Apron.

3.2.1.1 *Water Wells*

A review of the EDR Radius Map™ Report with Geospatial® dated December 15, 2015 (EDR, 2015) shows three United States Geological Survey (USGS) well within a one-mile radius of the Base, located to the northwest, south, and south-southwest of the property boundary (Appendix C-4). One public water system wells was identified within a one-mile radius of the Base, located to the south-southwest of the property boundary. Five private wells were identified within a one-mile radius of the Base. According to Base personnel, no drinking water wells are located at the Base.

According to the Work Plan for PA/SI (AECOM, 2014) there are 13 domestic water supply wells within a 1-mile radius of the Base as shown below:

1. 1-Newburgh Country Club, <0.1 mile west-southwest, upgradient, unknown depth
2. 1-Unknown Owner, 0.25 mile northwest, upgradient, 119 ft deep
3. 1-Unknown Owner, <0.1 mile south-southeast, downgradient, 119 ft deep
4. 2-Jones Motor Company, 0.25 mile east-southeast, downgradient, unknown depth
5. 5-Mt Airy Trailer Court, 0.25 mile south-southwest, upgradient, unknown depth
6. 3-Newburgh City, 0.335 mile south-southwest, downgradient, unknown depth

A correlation between the above wells and the EDR Report could not be confirmed with the information available.

3.2.2 *Soil*

No documentation was available showing that soils at the Base have been tested for PFCs; therefore it is unknown whether PFCs are present in the soil. However, based on historical practices, they may be present in the soil due to known or potential AFFF use at Building 104 (Current Fire Station), the Nozzle Testing Area, Building 105 (Former Fire Station), Hangar 100, Hangar 101, Hangar 102, Hangar 300, Hangar 301, Building 200 (AGE Maintenance), and the Apron.

3.2.3 *Sediment*

No documentation was available showing that sediments at the Base have been tested for PFCs; therefore it is unknown whether PFCs are present in sediments. Based on historical practices, PFCs could be present in sediment in locations that have received drainage from the Base storm sewer system and industrial waste line system. In general, surface releases at the Base would enter the network of in-ground conveyances and grass-lined ditches and ultimately discharge to the Recreation Pond, Retention Basin, or one of several points along the eastern property line.

3.2.4 *Surface Water*

The Base is located in the Hudson-Champlain Lowland of the Valley and Ridge Province. The property is relatively flat with significant downward slopes to the south and east. Surface elevations range from 440 to 450 ft above mean seal level (amsl) throughout the majority of the Base to a low 340 ft along the eastern property line and 400 ft along the southern property line (AECOM, 2015).

Surface water runoff flows in an east and southeast direction. Runoff is moderately high due to the large amount of impermeable surfaces (e.g., aircraft parking apron) and predominantly glacial till soil types. Two stormwater lagoons (Retention Basin) collect runoff from the installation and discharge to the Recreation Pond, which discharges to Sliver Stream and Modna Creek that both lie in the Hudson River drainage basin. Additional runoff flows eastward to wetlands in the vicinity of Murphy's Gulch, which is a tributary of the Hudson River (AECOM, 2015).

The drainage basins of the Base discharge through a network of in-ground conveyances and grass-lined ditches to the Recreation Pond or through several points along the eastern border of the Base. There are ten drainage basins that contain the industrial activities of the Base. These basins generally slope from northwest to southeast and are summarized below (ANG, 2015). Each drainage basin has an outfall associated with it.

- Drainage Basin 001: Buildings 401, 402, and 403
- Drainage Basin 002: Buildings 100, 101, 104, 200, 301, 302, 400 and Apron

- Drainage Basin 003: Buildings 101, 102, 105, 106, 107, 1107, 113, 202, 203, 204, 205, 206, 207, 208, 209, 211, 214, 300, 301, and 302
- Drainage Basin 004: Buildings 208 and 209
- Drainage Basin 005: Buildings 211 and 213
- Drainage Basin 006: Building 108
- Drainage Basin 007: Building 415
- Drainage Basin 008: Building 213, Roads, and Parking Lots
- Drainage Basin 009A/B: Landfill
- Drainage Basin 010: Recreation Pond

Based on historical practices, PFCs could be present in surface water in locations that have received drainage from Building 104 (Current Fire Station), the Nozzle Testing Area, Building 105 (Former Fire Station), Hangar 100, Hangar 101, Hangar 102, Hangar 300, Hangar 301, Building 200 (AGE Maintenance), and the Apron.

A map showing the Base storm drainage system is included in Appendix C-5.

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4.0 FINDINGS AND CONCLUSIONS

Fifteen potential release sites have been identified at the Base during this PA. Of those fifteen sites, thirteen are recommended for further investigation.

Further investigation is recommended at the Base to monitor and characterize any groundwater, soil, sediment, and/or surface water PFC contamination onsite. Sampling of soil, groundwater, sediment, and surface within the Base is recommended at a minimum to evaluate the potential of migration of PFCs. In addition, verification of the structural integrity of the Base sanitary sewer is advised.

Table 1 summarizes the recommendation and rationale for each AOC identified at the Base.

Table 1: Preliminary Assessment Report Summary and Recommendations

No.	Potential AFFF PFC AOCs	GPS Coordinates		Rationale	Recommendation
		Latitude	Longitude		
1	Building 104 (Current Fire Station)	41.504103°	-74.092099°	Fire Station since 2007. AFFF stored in FD vehicles and 55-gal drums. Building floor drains are connected to an OWS (Building 111) then to the Apron storm sewer system.	Proceed to SI; focus on soil and groundwater.
2	Nozzle Testing Area	41.503516°	-74.092848°	Only known FD equipment nozzle testing area, located west of Building 104. Testing has occurred annually since 2007.	Proceed to SI; focus on soil and groundwater.
3	Building 105 (Former Fire Station)	41.497738°	-74.087107°	Fire Station from 1988 to 2007. No documented AFFF releases. Trench drains discharge to the industrial waste line.	Proceed to SI; focus on soil and groundwater.
4	Hangar 100	41.500072°	-74.087481°	AFFF FSS from 1987 to 2006. At least one accidental AFFF release occurred during FSS activation. Trench drains discharge to the industrial waste system and ultimately the Retention Basin.	Proceed to SI; focus on soil and groundwater.
5	Hangar 101	41.499191°	-74.085677°	AFFF FSS from 1987 to 2009. Several accidental AFFF releases occurred during FSS activation. Trench drains discharge to the industrial waste system and ultimately the Retention Basin.	Proceed to SI; focus on soil and groundwater.
6	Hangar 102	41.498436°	-74.087234°	AFFF FSS from 1988 to 2006. Several accidental AFFF releases occurred during FSS activation. Trench drains discharge to the industrial waste system and ultimately the Retention Basin.	Proceed to SI; focus on soil and groundwater.

No.	Potential AFFF PFC AOCs	GPS Coordinates		Rationale	Recommendation
		Latitude	Longitude		
7	Hangar 300	41.502354°	-74.084695°	AFFF FSS from 1989/90 to 2004. No known AFFF releases. Trench drains discharge to the industrial waste system and ultimately the Retention Basin.	Proceed to SI; focus on soil and groundwater.
8	Hangar 301	41.497361°	-74.083770°	AFFF FSS from 1992 to 2004. At least one accidental AFFF release occurred during FSS activation. Trench drains discharge to the industrial waste system and ultimately the Retention Basin.	Proceed to SI; focus on soil and groundwater.
9	Building 108 (Pump House)	41.497339°	-74.083764°	Historical AFFF storage location (unknown quantities). No known AFFF releases. Floor drains discharge via the storm sewer system to Outfall 006.	NFA.
10	Building 200 (Vehicle Maintenance)	41.501656°	-74.085736°	May have been impacted by potential AFFF discharges from FD vehicles during maintenance. Floor drains discharge to the sanitary sewer system.	Proceed to SI; focus on soil and groundwater.
11	Apron	41.502869°	-74.087836°	Aircraft loading/parking area that may have been impacted by AFFF.	Proceed to SI; focus on soil and groundwater on the downgradient edge of the apron.
12	Outfall 002	41.496152°	-74.086922°	May have been impacted by AFFF discharges from Hangar 100, a portion of Hangar 101, Building 200, Hangar 301, and the Apron.	Proceed to SI; focus on soil, groundwater, sediment, and surface water at this outfall.
13	Outfall 003	41.496506°	-74.086356°	May have been impacted by AFFF discharges from a portion of Hangar 101, Hangar 102, Hangar 300, and Hangar 301.	Proceed to SI; focus on soil, groundwater, sediment, and surface water at this outfall.

No.	Potential AFFF PFC AOCs	GPS Coordinates		Rationale	Recommendation
		Latitude	Longitude		
14	Outfall 006	41.496841°	-74.083776°	Receives discharges from Building 108, which has had no known AFFF releases.	NFA.
15	Retention Basin	41.496952°	-74.085313°	May have been impacted by AFFF discharges from any of the above buildings or Apron.	Proceed to SI; focus on soil, groundwater, sediment, and surface water (if present).

AFFF – Aqueous Film Forming Foam

ANG – Air National Guard

AOC – Area of Concern

GPS – Global Positioning System

NFA – No Further Action

PFC – Perfluorinated Compound

SI – Site Investigation

5.0 REFERENCES

- AECOM, 2014. Work Plan for Preliminary Assessment/Site Investigation Report for Regional Compliance Restoration Program, Stewart Air National Guard Base, Newburgh, New York. April.
- AECOM, 2015. Preliminary Assessment/Site Investigation Report for Regional Compliance Restoration Program, Stewart Air National Guard Base, Newburgh, New York. July.
- ANG, 2015. Storm Water Pollution Prevention Plan. January
- BB&E Inc (BB&E), 2015. Final Perfluorinated Compound (PFC) Preliminary Assessment Work Plan, Prepared for Headquarters Air National Guard Andrews AFB, Maryland. July.
- USEPA, 2014. Peer Review of Health Effects Documents for PFOA and PFOS. February.

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FIGURES



Stewart Air National Guard

**Figure 1
Site Location Map**

**New York Air National Guard
Newburgh, New York**



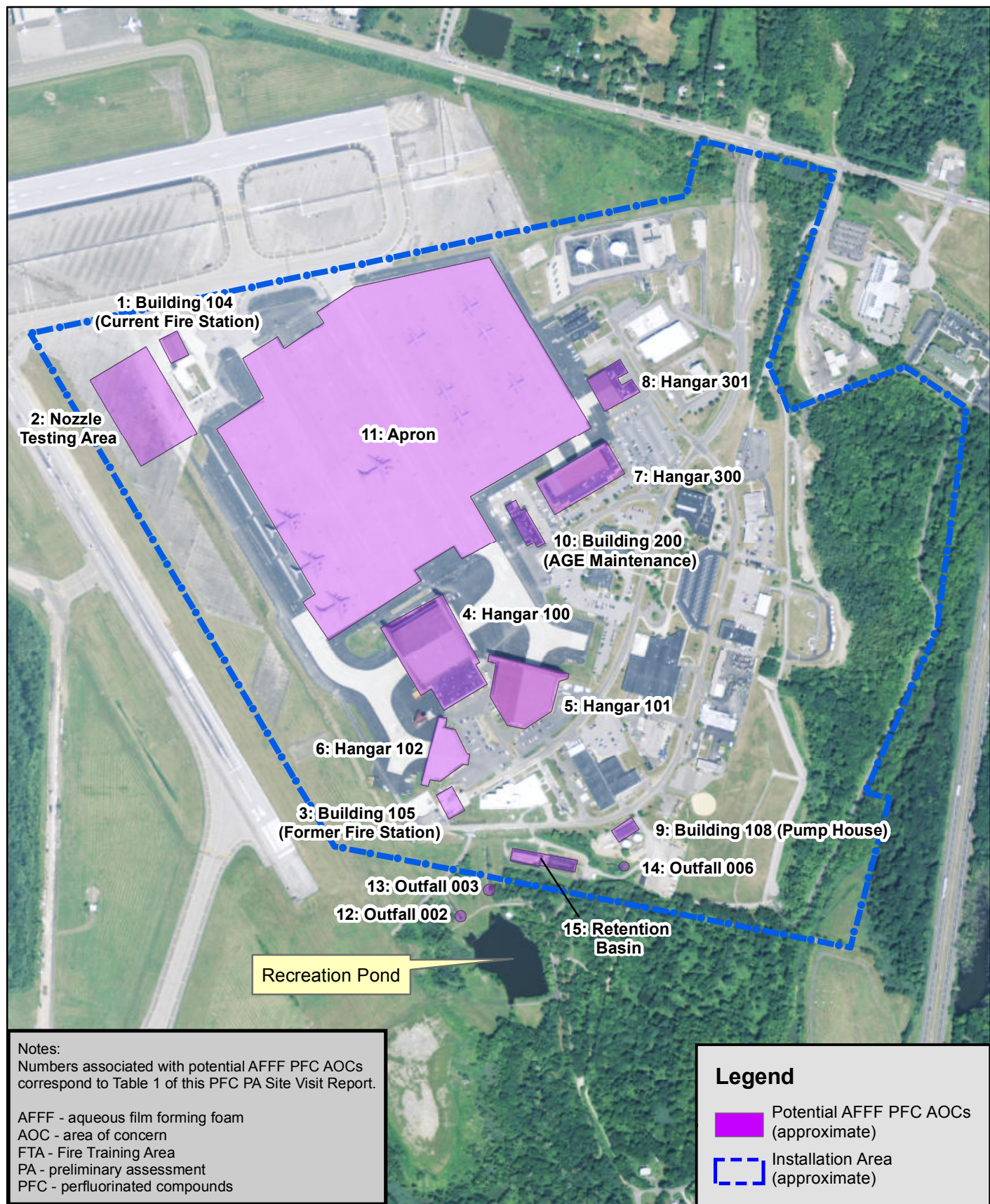


Figure 2
Site Features and Potential AOCs
Stewart Air National Guard Base
Newburgh, New York



APPENDIX A

PHOTO DOCUMENTATION

Appendix A
Stewart Air National Guard Base, PFC PA Site Visit, Newburgh, NY – December 8, 2015



Photo 1: Current AFFF tote and drum storage in Building 104 (Current Fire Station).

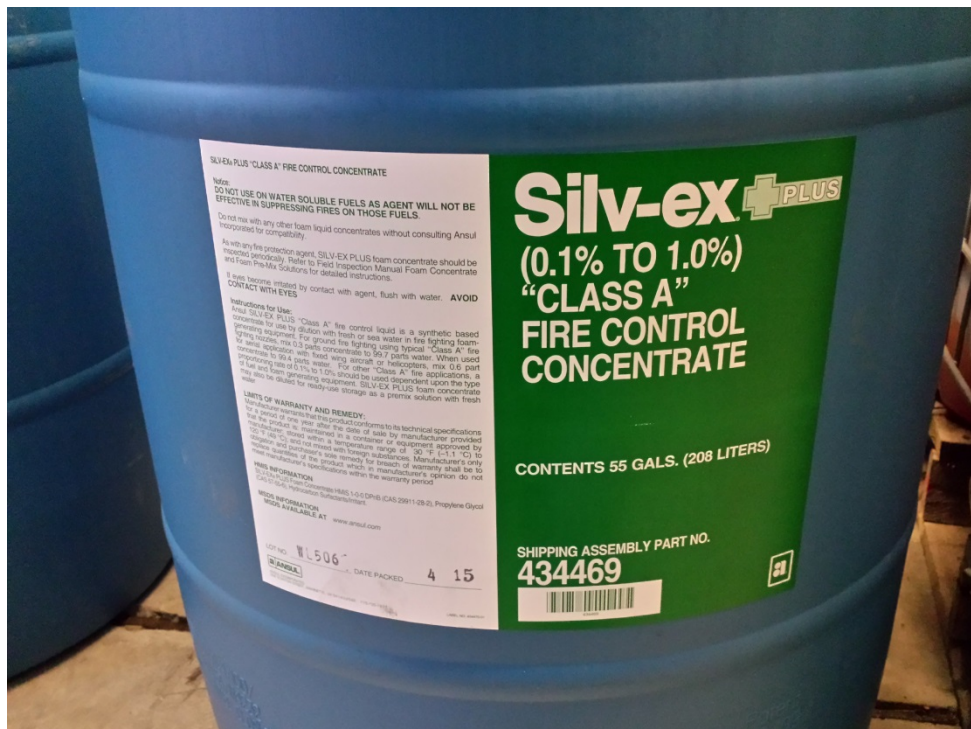


Photo 2: Current AFFF drum storage in Building 104 (Current Fire Station).

Appendix A
Stewart Air National Guard Base, PFC PA Site Visit, Newburgh, NY – December 8, 2015



Photo 3: Empty drums in Building 104 (Current Fire Station) used for transfer of AFFF from vehicles.



Photo 4: Trench drains were present in Building 104 (Current Fire Station).

Appendix A
Stewart Air National Guard Base, PFC PA Site Visit, Newburgh, NY – December 8, 2015



Photo 5: The current AFFF inventory includes a 1,000 gallon trailer, located at Building 104 (Current Fire Station).



Photo 6: Looking west from Building 104 (Current Fire Station) toward the Nozzle Testing Area.

Appendix A
Stewart Air National Guard Base, PFC PA Site Visit, Newburgh, NY – December 8, 2015



Photo 7: Floor drains are present at Hangar 101.



Photo 8: Boiler Room at Hangar 100, which currently is equipped with a HEF bladder tank (formerly equipped with AFFF bladder tanks).

Appendix A
Stewart Air National Guard Base, PFC PA Site Visit, Newburgh, NY – December 8, 2015



Photo 9: AFFF generators were formerly installed on the high beams in Hangar 100.

Appendix A
Stewart Air National Guard Base, PFC PA Site Visit, Newburgh, NY – December 8, 2015



Photo 10: Floor drains were present in Hangar 100.

Appendix A
Stewart Air National Guard Base, PFC PA Site Visit, Newburgh, NY – December 8, 2015



Photo 11: Floor drains were present at Hangar 102.

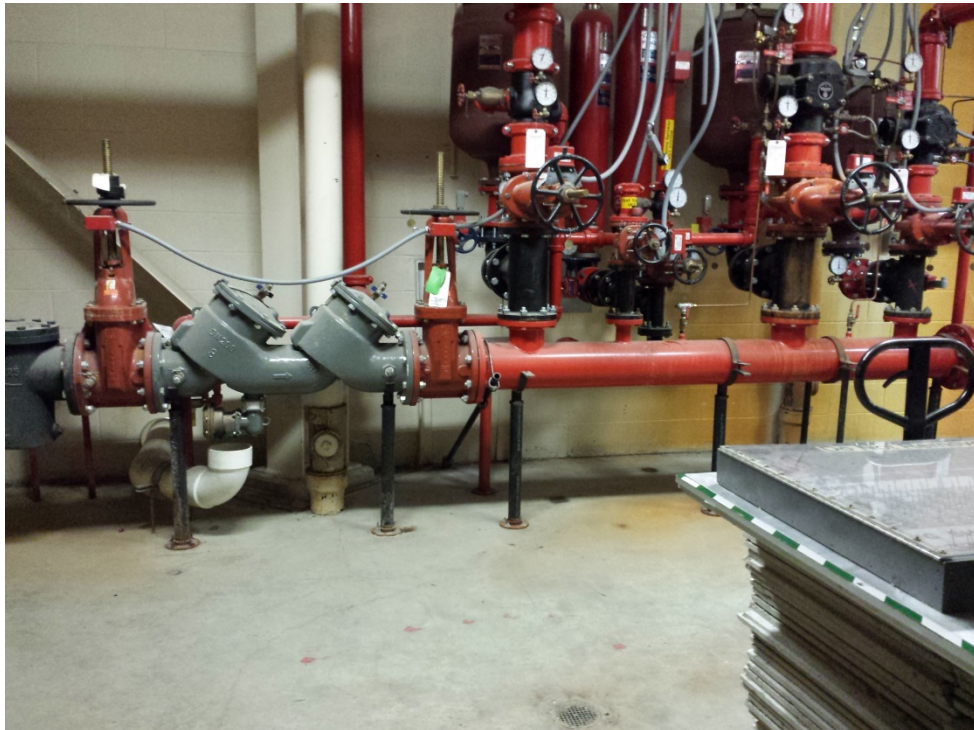


Photo 12: Staining on the walls and floor of the Electrical and Fire Protection Equipment Room in Hangar 102 was observed.

Appendix A
Stewart Air National Guard Base, PFC PA Site Visit, Newburgh, NY – December 8, 2015



Photo 13: Looking west toward Building 105 (Former Fire Station).



Photo 14: Floor drains were present at Building 105 (Former Fire Station).

Appendix A
Stewart Air National Guard Base, PFC PA Site Visit, Newburgh, NY – December 8, 2015



Photo 15: Looking east toward the eastern lagoon (Retention Basin).



Photo 16: Looking south toward the western lagoon (Retention Basin).

Appendix A
Stewart Air National Guard Base, PFC PA Site Visit, Newburgh, NY – December 8, 2015



Photo 17: Looking north toward Outfall 002.



Photo 18: Looking south toward Recreation Pond, located south of the Base property boundary.

Appendix A
Stewart Air National Guard Base, PFC PA Site Visit, Newburgh, NY – December 8, 2015



Photo 19: Building 108 (Pump House). Floor drains were present.



Photo 20: Floor drains were present in Hangar 301.

Appendix A
Stewart Air National Guard Base, PFC PA Site Visit, Newburgh, NY – December 8, 2015



Photo 21: Current HEF FSS at Hangar 301.



Photo 22: Fire department vehicle maintenance is conducted in the pit bay within Building 200 (AGE Maintenance).

APPENDIX B

RECORDS OF COMMUNICATION

Interviewees: Base Civil Engineering
3 Fire Dept (Chief Bell)
12/8/15

**Interview Questions regarding AFFF use
(At Present and back to 1970)**

1. When did AFFF first start being used on this installation?

Started construction on the first hangar in 1985, brought online 1987

2. What are the years of active use for each Fire Training Area (FTA), Aircraft Hangar, Fire Department, other places AFFF may have been used (collectively Potential Areas of Concern (PAOC)?

No FTA's on this Facility Hangars – 1987 thru 2009 Fire Dept. – only trucks & pump trailer

3. What type of AFFF is used or has been used on this installation (i.e. 3%, 6%, High Expansion Foam)?

3% Ansulite Mil-spec

1% Ansul Class A

4. What manufacturer's AFFF products are used or were used on this installation (i.e. 3M, Ansul, Chemguard, etc.)?

Ansul

5. Did you ever dispose of old bulk AFFF, if so, when and where?

No, whenever there is bulk AFFF it is distributed to other Guard Units or when acceptable given to Mutual Aid Volunteer Departments

6. Is the AFFF stored as a mixed solution (3% or 6%) or do you formulate the AFFF on the installation?

3% purchased ready to use

7. If AFFF is formulated on base, where is the solution mixed, contained, transferred, etc.?

Purchased ready to use

8. Are your automated fire suppression systems currently charged with AFFF or have they been retrofitted for use of high expansion foam?

Retro-fitted for use of high expansion

9. If retrofitted, when was that done?

2004-2009 last conversion completed in 2009

*Hangar 100 = 2006
Hangar 101 = 2009
Hangar 102 = 2006
Hangar 300 = 2004
Hangar 301 = 2004*

*Will download
construction drawings
of AFFF → HFF
conversion to CD.*

10. Do you have an inventory of the amount of AFFF stored on the installation, now and in the past, or present in automated fire suppression systems? Were retention ponds built to store discharged AFFF? Was the AFFF trickled to the sanitary sewer or left in the pond to infiltrate?

Yes we have an inventory of the amount of AFFF-We do not have AFFF automated Fire Suppression systems

Discharged AFFF: 2 Lagoons – sent to Lagoons for treatment

11. Provide a list of vehicles that carried AFFF, now and in the past, and where are/were they located? Any vehicles have a history of leaking AFFF?

*Vehicles in USE that carry AFFF – Fire Department 3,5,6,7,8 and the foam trailer
NO history of significant leaks that we are aware*

12. How much AFFF (gallons) is/was carried/stored in the specified vehicles?

See Attachment #1

13. Do you ever dispose of unused AFFF? If so, how and where?

No – see question #5

14. Has unused AFFF ever been disposed of in the past? If so, how and where?

No – see question #5

15. Do you/did you test the vehicles spray patterns to make sure equipment is working properly?

Yes, FAA 139 required annual testing and documentation

16. How often are/were these spray tests performed and can you provide the locations of these tests, now and in the past?

Yes, FAA 139 required annual testing and documentation – conducted at Fire Dept bldg. 104

17. Can you describe the procedure on how vehicles and systems are/were supplied with AFFF?

Pony pump on Foam trailer

18. Can you provide the procedures on how these vehicles are/were cleaned/decontaminated and where vehicle cleaning is performed currently as well as performed in the past?

The storage tanks for the AFFF on vehicles are never completely empty – if AFFF is removed for maintenance, it is stored in approved storage barrels – the tanks are not decontaminated.

19. Is/was there a specified area on the installation where vehicles are filled with AFFF and does this area have secondary containment in case of spills?

Yes, The Firehouse Bldg. 104 is equipped with drains that go to secondary containment

20. When a release of AFFF occurs during a fire training exercise, now and in the past, how is the AFFF cleaned and disposed of?

*N/A – no fire training exercises
All training is conducted at off base facilities*

21. How many FTAs are/were on this installation and where are they?

N/A

22. How many FTAs are active and inactive?

N/A

23. What types of fuels/flammables were used at the FTAs?

N/A

24. For inactive FTAs, when was the last time that fire training using AFFF was conducted at them? Find out ahead of time in Admin Record for former FTAs.

N/A

25. What are/were the non-FTA locations where PFCs or AFFF release systems are installed (i.e. Hangars, Wastewater Treatment Plants, Fire Stations, etc.)? Where are/were these locations (Building numbers)?

1987 1987 1988 1989/90 1992 - Date fire suppression system installed & put into use.

All hangars had AFFF systems. They are 100, 101, 102, 300, 301. - all systems have been demolished
Areas that had AFFF stored in them are 100 Boiler room, 102 Boiler room, 108 pump house, and 105 old FD.

26. Do you have a list (Building names and numbers, current and demolished) where the fire suppression systems either currently contain or have contained AFFF?

Yes, Bldg. 300, 301, 100, 101, 102 - all systems have been demolished

Fire suppression systems are under ANG command, but these buildings are under Marine's command. ANG oversaw engineering and

27. Do you have records of fuel spill logs and emergency response logs? Knowledge of aircraft mishaps/crashes?

engineered conversion to HEF.

FD has them logged as responses. Environmental has their own log

28. Do you have recollection or records of AFFF being used as a precaution in response to fuel releases to prevent fires?

No occurrence on this Facility

29. Do you have recollection or records of historical emergency response sites (i.e. crash sites and fires) where AFFF was used?

Recollection of 1996 /Fed Ex fire at the Stewart International AirPort
Also a 2015 crash @ IAP airshow

30. Do you have recollection or record of emergency runway landings where foam might have been used as a precaution?

NO, not a practice at SWF

31. If not written records or incomplete written records, do you have anecdotal/verbal information and locations of spills or other emergency response incidents where AFFF was used?

See #29

32. What is the typical procedure for removing dispensed AFFF from an area where it has been used?

If AFFF was dispensed on the ramp, it is captured in the safe drain, otherwise it goes to the lake or we divert to the lagoon and we report it and pay for all of the contents in the lagoon. Contents in the safe drain would be removed and disposed by my office with the help of the LFM for cheap.

If AFFF was dispensed in the hangars (using the trucks) the industrial waste would capture it and send it to the lagoons. Environmental office would dispose of it via OSRO contract

33. Can you provide any other locations where AFFF has been stored, released, or used (i.e. hangars, buildings, fire stations, firefighting equipment testing and maintenance areas, emergency response sites, storm water/surface water, waste water treatment plants, and AFFF ponds)?

Stored – 104, 105 and 5 hangar mechanical rooms / Lagoons

also Hangar 301 spill
- Al Crudale: spill at Hangars 100 & 101 due to broken bladder (fire suppression system)
- Civil Engineering: may have been accidental system activation at Hangar 102.

34. Do you have or did you have a chrome plating shop on base? If no, skip to Question #38.

NO

35. What were/are the years of operation of that chrome plating shop?

Skip to #38

36. Do you know whether the shop has/had a foam blanket mist suppression system or used a fume hood for emissions control?

Skip to #38

37. If foam blanket mist suppression was used, where was the foam stored, mixed, applied, etc.?

Skip to #38

38. Is there anyone else or other base organization personnel that you would recommend we interview? Name, organization, position, phone number, e-mail.

Major Caputo – Environmental x2366

IAP – Guillio Minguillo 845-838-8240

Veh MX – CMSgt Ken Anderson x2757

CES – Al Crudale x2700

39. Was it common practice to wash away fuel spills with AFFF?

No – soak up with an absorbent pad

40. Identify drainage patterns around flightline/ramp area. Point source discharge is likely AFFF Area of Concern (AOC).

Please see attachment #2

APPENDIX C

SUPPORTING DOCUMENTATION

APPENDIX C-1

CURRENT FD VEHICLE AFFF INVENTORY

105th ARFF Vehicle Information

Airport: SWF

Call Sign	Model Year	Manufacturer	Model (Type)	Vehicle Status	Water gallons	AFFF gallons	AFFF Concentrate	Dry Chemical Type	Dry Chemical Capacity Lbs.	Maximum Primary Turret Discharge Rate
Crash 3	1996	Oshkosh	P-23	In service	3,000	500	3%	PKP	500	1250 gpm
Crash 8	1996	Oshkosh	P-23	In service	3,000	500	3%	PKP	500	1250 gpm
Crash 7	2006	Oshkosh	P-19	In service	1,500	210	3%	PKP	450	1,250 gpm
Crash 5	2013	KME	P-34 RIV	In service	440	40	3%	N/A	N/A	60 gpm
Crash 6	2013	KME	P-34 RIV	In service	440	40	3%	N/A	N/A	60 gpm
				Total:	8,980	1,290			1,450	

APPENDIX C-2

AFFF SPILL – THE SENTINEL, JULY 26, 1990

... and More!

New Windsor Officials Meet With NYANG Over Leakage Problem



Lt. Col. William Steene, left, explains the process that the New York Air National Guard uses for diverting de-icing materials into a retention pond, with, from left, New Windsor Town Attorney Tad Seamon, Town Engineer Dick McGoe, Joe Marcogliese of the state DEC, and Mike Tremper, Director of Operations for CAMO Pollution Control, operators of the Town of New Windsor's sewerage treatment plant. Photo by J. Mecca.

Supervisor, DEC Engineer Take "Wait-And-See" Stand On Sollutions

By Joseph Mecca

STEWART AIRPORT - Officials from the Town of New Windsor met with officers from the New York Air National Guard, Monday, concerning an ongoing problem of leakage of large amounts of concentrated foam, used for firefighting, into New Windsor's sanitary sewer system.

The material in question is Ansulite AFFF concentrate, a fire-suppressing foam. New Windsor has had several incidents where the foam leaked, in large amounts into the Town sewer system and eventually to the Town's sewer treatment plant. The foam kills off the bacteria which treats the wastewater at the plant, effectively shutting down a portion of the plant.

According to Lt. Col. William Steene, NYANG Base Civil Engineer, the foam is biodegradeable, but when the bacteria tries to consume the large amounts of foam concentrate, the bacteria

NYANG officials believe that all previous problems have been corrected by New Windsor and a state Department of Environmental Conservation engineer are taking a wait-and-see attitude on the situation.

The contingent of New Windsor officials included Supervisor George Green, Town Councilman Ernest Spignardo, Town Attorney Tad Seamon, Town Engineer Dick McGoe, and Mike Tremper of CAMO Pollution Control, the Town Sewer Treatment Plant operators. Also on hand were Assemblyman William J. Larkin, Jr. (R-C-95th District), and Joe Marcogliese, Associate Sanitary Engineer with the State DEC. The group was given an overview of the situation by Lt. Col. Steene, who then, along with several other officers, led a tour of the aircraft hanger where the most recent spill occurred.

Two weeks ago, a blown valve in the foam storage area of hanger 100 and uncovered floor

Leakage Problem

(continued from page 1)

drains which lead directly into the Town sewer system resulted in untold gallons of foam released into the Town's sewers. Normally, when the chemicals are used to fight a fire, the waste is diverted through a series of underground pipes to a man-made 485,000 gallon lagoon, which holds the effluent until it can be gradually released into the sanitary sewer system. In small amounts the foam can be easily consumed by the bacteria.

Steene said showed the entourage that the floor drains leading to the Town sewer system had been cemented over. Several smaller drains which led to the holding lagoon were left unplugged. Observing the holding tanks and piping system, some of valves appeared to be corroding. "The (foam) material is corrosive, the pipes are not sufficient," Town Engineer McGoeys said, "They should be using stainless steel pipes and welded joints instead of flanges." The preference for flanges makes replacing pipes easier, but McGoeys said that stainless steel piping would last considerably longer.

According to Steene, NYANG will spend over \$192,000 to correct the problems. Plans include the construction of a pre-treatment system, which has already

been designed, and the possibility of a 2nd lagoon to handle any additional runoff from the de-icing of planes or excess water.

Supervisor George Green said he was satisfied that NYANG was addressing the problems, but wasn't satisfied that the situation has been corrected. "As far as the Town of New Windsor is concerned," he said "they (NYANG) must do what is necessary if they want to keep using New Windsor's sanitary sewer system."

DEC Engineer Joe Marcogliese was concerned about the lagoon in particular. "What happens if there is an accident (spill) and a storm occurred at the same time," he said. "To me, the lagoon appeared to be about 3/4 full. If an inch of rain falls on the tarmac, and an accident occurred, I would envision more water than they could contain."

Marcogliese suggested that if NYANG plans to build a 2nd lagoon, it's design should be for a "10-year" storm contingency, that is, the lagoon should be able to handle the worse possible storm during a 10 year period. Ultimately, though, Marcogliese said that everyone will have to wait for the the next accident before "we see how well the problems have been solved. I'm happy that they seem to be responding, but in the past they've responded and things keep happening."

APPENDIX C-3

AFF TO HEF FSS CONVERSION DRAWINGS

HANGAR 100

REPAIR MAIN HANGAR: BUILDING 100

105th AIRLIFT WING

STEWART AIR NATIONAL GUARD BASE

NEWBURGH, NY

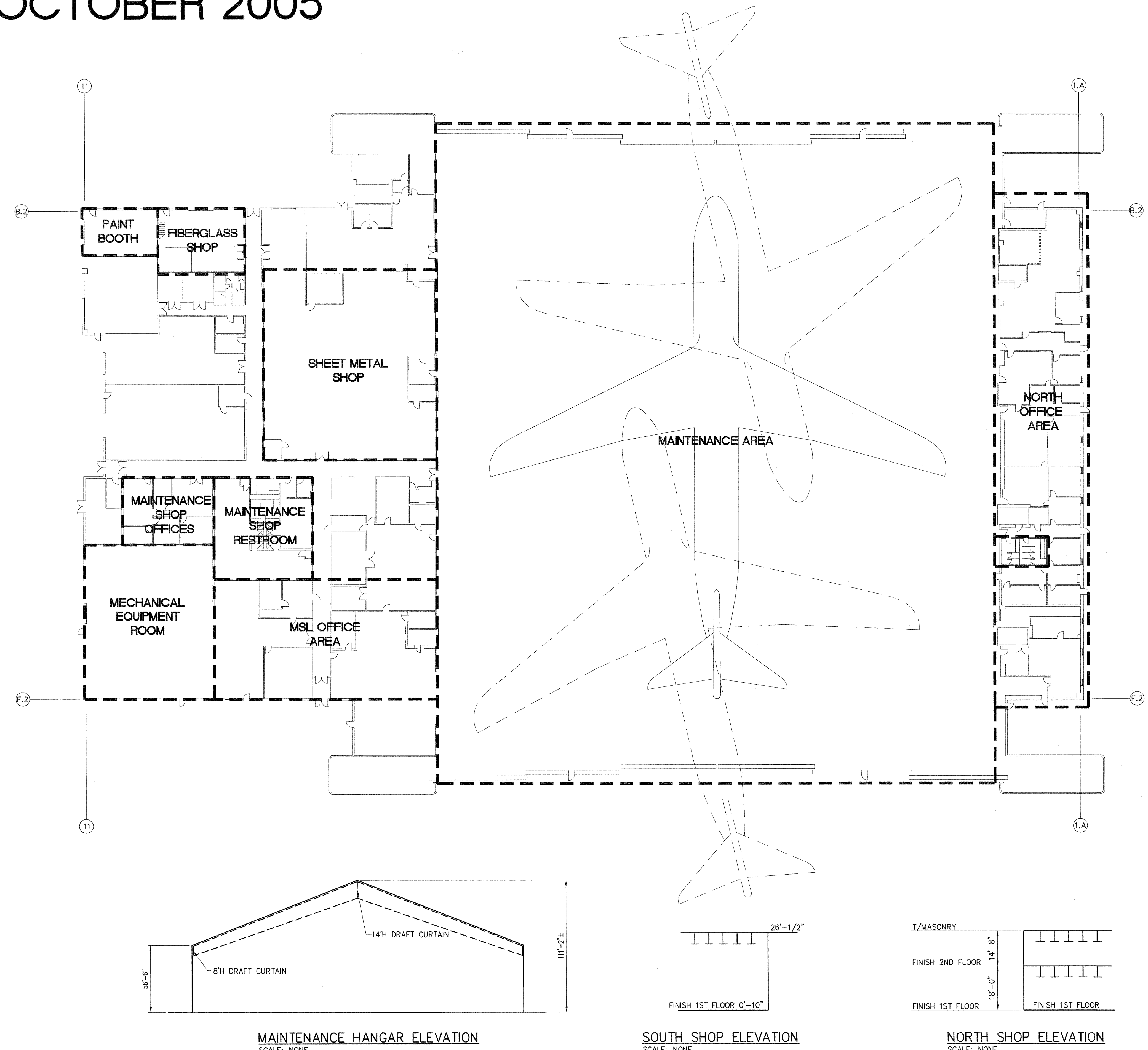
TASK ORDER NO. 0030; ANG PROJECT WHAY 942426

OCTOBER 2005

DRAWING LIST		
DRAWING No.	T I T L E	SHEET NO.
T-1	TITLE SHEET	1 OF 51
T-2	SEQUENCE OF OPERATION	2 OF 51
A-100	SELECTIVE REMOVALS AND CONSTRUCTION GROUND LEVEL PLAN NORTH	3 OF 51
A-100A	REFLECTED CEILING AND FINISH GROUND LEVEL PLAN NORTH	4 OF 51
A-101	SELECTIVE REMOVALS AND CONSTRUCTION SECOND FLOOR PLAN NORTH	5 OF 51
A-101A	REFLECTED CEILING AND FINISH UPPER LEVEL PLAN NORTH	6 OF 51
A-102	CASEWORK PLANS AND DETAILS (NORTH)	7 OF 51
A-104	DOOR SCHEDULE AND DETAILS (NORTH)	8 OF 51
A-200	EXISTING/SELECTIVE REMOVALS FLOOR PLAN (SOUTH)	9 OF 51
A-200A	CONSTRUCTION FLOOR PLAN (SOUTH)	10 OF 51
A-200B	REFLECTED CEILING PLAN (SOUTH)	11 OF 51
A-201	EXISTING/SELECTIVE REMOVALS FLOOR PLAN (SOUTH)	12 OF 51
A-201A	CONSTRUCTION FLOOR PLAN (SOUTH)	13 OF 51
A-201B	REFLECTED CEILING PLAN (SOUTH)	14 OF 51
A-202	DOOR SCHEDULE AND DETAILS (SOUTH)	15 OF 51
A-203	DOOR AND FINISH SCHEDULES	16 OF 51
S-1	FALL PROTECTION SYSTEM HANGAR ROOF PLAN	17 OF 51
S-2	STRUCTURAL DETAILS AND SCHEDULES	18 OF 51
M-1	MECHANICAL LEGEND, SYMBOLS AND ABBREVIATIONS	19 OF 51
M-2	MAINTENANCE HANGAR HVAC AND ELECTRICAL DEMO PLAN	20 OF 51
M-3	MAINTENANCE HANGAR ELECTRICAL AND HVAC NEW PLAN	21 OF 51
M-4	MAINTENANCE HANGAR HVAC SCHEDULES AND DETAILS	22 OF 51
M-5	NORTH OFFICE AREA HVAC DEMO PLANS	23 OF 51
M-6	NORTH OFFICE AREA ELECTRICAL AND HVAC NEW PLANS	24 OF 51
M-7	NORTH OFFICE AREA HOT WATER FLOW DIAGRAM	25 OF 51
M-8	NORTH OFFICE AREA HVAC SCHEDULES AND DETAILS	26 OF 51
M-9	MECHANICAL EQUIPMENT ROOM HVAC/ELECTRICAL PLANS	27 OF 51
M-10	MECHANICAL EQUIPMENT ROOM HVAC SCHEDULES, FLOW DIAGRAMS, AND DETAILS	28 OF 51
M-11	FIBERGLASS SHOP ELECTRICAL AND HVAC PLANS, SCHEDULES, AND DETAILS	29 OF 51
M-12	PAINT BOOTH ELECTRICAL AND HVAC PLANS, SCHEDULES, AND DETAILS	30 OF 51
M-13	SHEET METAL SHOP ELECTRICAL AND HVAC PLANS, SCHEDULES, AND DETAILS	31 OF 51
M-14	MSL OFFICE AREA AND HYDRAULIC SHOP HVAC AND ELECTRICAL PLANS, SCHEDULES, AND DETAILS	32 OF 51
M-15	MAINTENANCE SHOP RESTROOMS HVAC PLANS, SCHEDULES, AND DETAILS	33 OF 51
M-16	MAINTENANCE SHOP RESTROOMS HVAC, PLUMBING PLANS, SCHEDULES, AND DETAILS	34 OF 51
M-17	MAINTENANCE SHOP OFFICES HVAC PLANS, SCHEDULES, AND DETAILS	35 OF 51
E-1	ELECTRICAL LEGEND, SYMBOLS, ABBREVIATIONS AND DIAGRAMS	36 OF 51
E-2	SHEET METAL SHOP LIGHTING PLAN	37 OF 51
E-3	MAINTENANCE SHOP RESTROOMS LIGHTING PLAN	38 OF 51
E-4	NORTH OFFICE AREA ELECTRICAL POWER AND SYSTEMS PLANS	39 OF 51
E-5	NORTH OFFICE AREA ELECTRICAL LIGHTING PLANS	40 OF 51
E-6	PANEL SCHEDULES	41 OF 51
E-7	NORTH OFFICE AREA ELECTRICAL LIGHTING PLANS	42 OF 51
FA-1	DETECTION SYSTEM LEGEND, NOTES AND DETAILS	43 OF 51
FA-2	DETECTION SYSTEM DEMOLITION PLAN	44 OF 51
FA-3	HANGAR BAY DETECTION SYSTEM PLAN	45 OF 51
FP-1	LEGEND, NOTES AND DETAILS	46 OF 51
FP-2	HANGAR BAY FIRE PROTECTION DEMOLITION PLAN	47 OF 51
FP-3	DEMOLITION DETAILS	48 OF 51
FP-4	HANGAR BAY OVERHEAD FIRE SPRINKLER NEW WORK PLAN	49 OF 51
FP-5	HANGAR BAY HI EXPANSION FOAM SYSTEM NEW WORK PLAN	50 OF 51
FP-6	FIRE PROTECTION DETAILS	51 OF 51

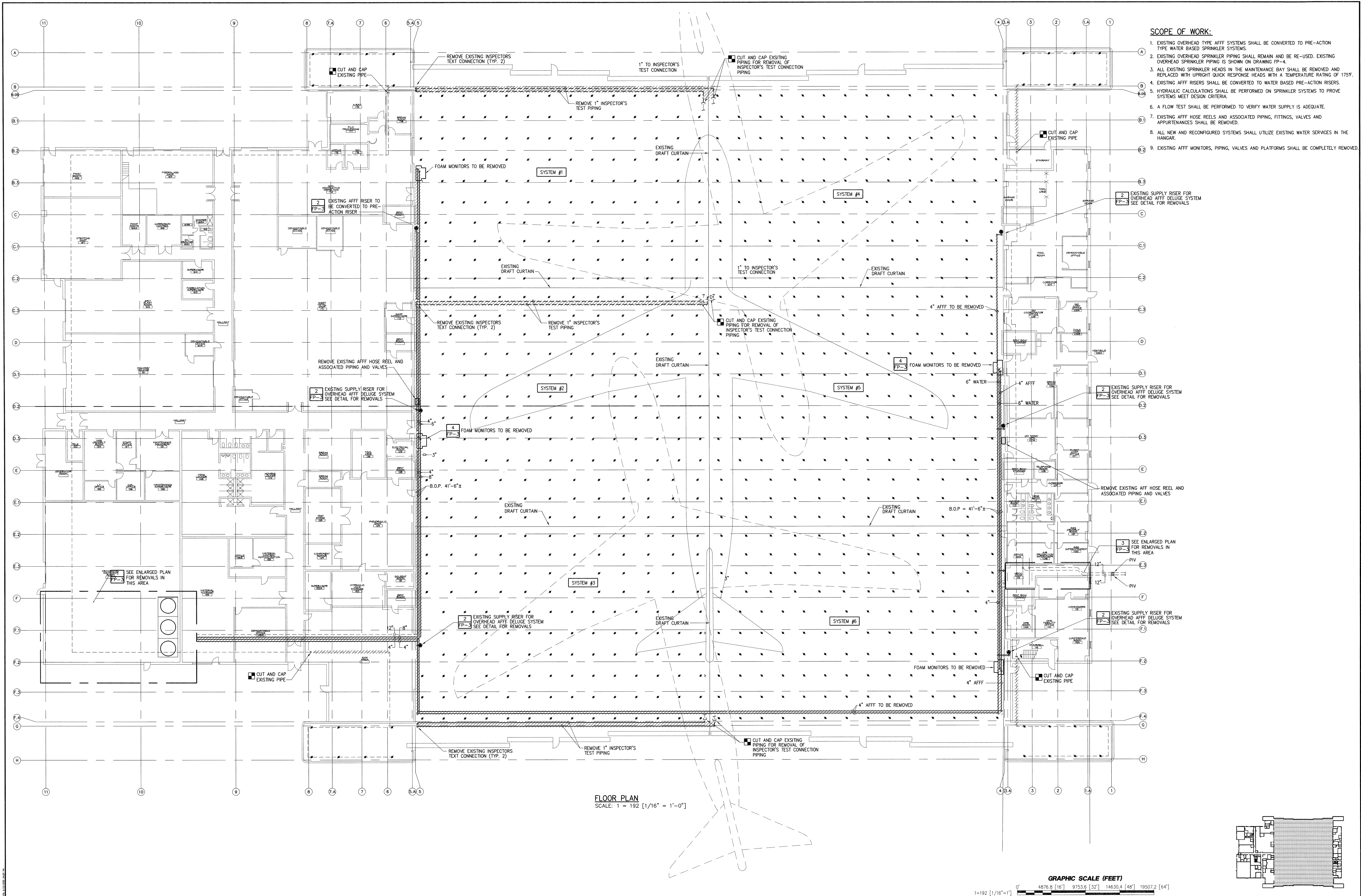
****GENERAL NOTE:**

- MECHANICAL DRAWINGS MAY SHOW BOTH MECHANICAL & ELECTRICAL WORK. M/E CONTRACTOR TO REVIEW BOTH M/E DRAWINGS FOR APPLICABLE WORK. GENERAL CONTRACTOR TO COORDINATE WORK OF ALL TRADES AND INCLUDE COSTS FOR ALL WORK INDICATED ON DRAWINGS.
- GENERAL CONTRACTOR TO PROVIDE CUTTING AND PATCHING FOR ALL TRADES.



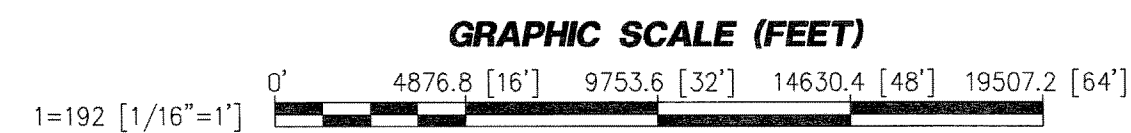
ALL DIMENSIONS ARE MILLIMETERS (MM) UNLESS OTHERWISE NOTED

Revisions:	Drawn By:	App'd. By:	Date:		Designed By:	Date:	 143 JAY STREET SCHENECTADY, NY 12305 (518) 374-9412 FAX (518) 374-4049 info@srgharch.com	ARCHITECTURE PLANNING INTERIOR DESIGN REHABILITATION	 111 Winners Circle, PO Box 5289, Albany, NY 12205 www.cloughharbour.com CHA Project No. 12726		REPAIR MAIN HANGAR: BUILDING 100 STEWART AIR NATIONAL GUARD BASE, NEWBURGH, NEW YORK		Drawing No.		
											T-1				
												SCALE: AS SHOWN	DATE: JANUARY 2006		



- SCOPE OF WORK:**
- EXISTING OVERHEAD TYPE AFF SYSTEMS SHALL BE CONVERTED TO PRE-ACTION TYPE WATER BASED SPRINKLER SYSTEMS.
 - EXISTING OVERHEAD SPRINKLER PIPING SHALL REMAIN AND BE RE-USED. EXISTING OVERHEAD SPRINKLER PIPING IS SHOWN ON DRAWING FP-4.
 - ALL EXISTING SPRINKLER HEADS IN THE MAINTENANCE BAY SHALL BE REMOVED AND REPLACED WITH UPRIGHT QUICK RESPONSE HEADS WITH A TEMPERATURE RATING OF 175°F.
 - EXISTING AFF RISERS SHALL BE CONVERTED TO WATER BASED PRE-ACTION RISERS.
 - HYDRAULIC CALCULATIONS SHALL BE PERFORMED ON SPRINKLER SYSTEMS TO PROVE SYSTEMS MEET DESIGN CRITERIA.
 - A FLOW TEST SHALL BE PERFORMED TO VERIFY WATER SUPPLY IS ADEQUATE.
 - EXISTING AFF HOSE REELS AND ASSOCIATED PIPING, FITTINGS, VALVES AND APPURTENANCES SHALL BE REMOVED.
 - ALL NEW AND RECONFIGURED SYSTEMS SHALL UTILIZE EXISTING WATER SERVICES IN THE HANGAR.
 - EXISTING AFF MONITORS, PIPING, VALVES AND PLATFORMS SHALL BE COMPLETELY REMOVED.

FLOOR PLAN
SCALE: 1" = 192' [1/16" = 1'-0"]



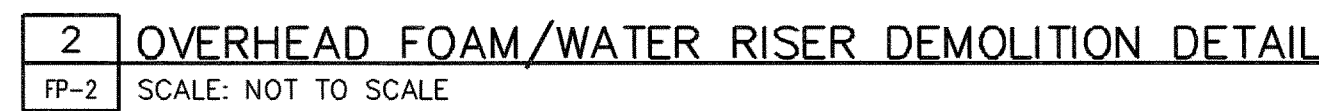
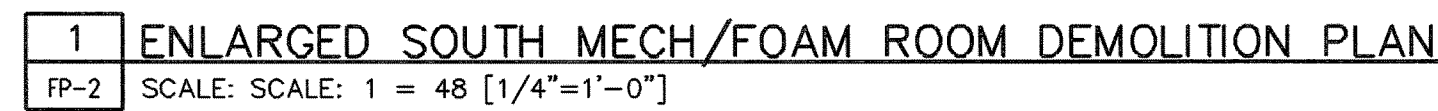
KEY PLAN

ALL DIMENSIONS ARE MILLIMETERS (MM) UNLESS OTHERWISE NOTED

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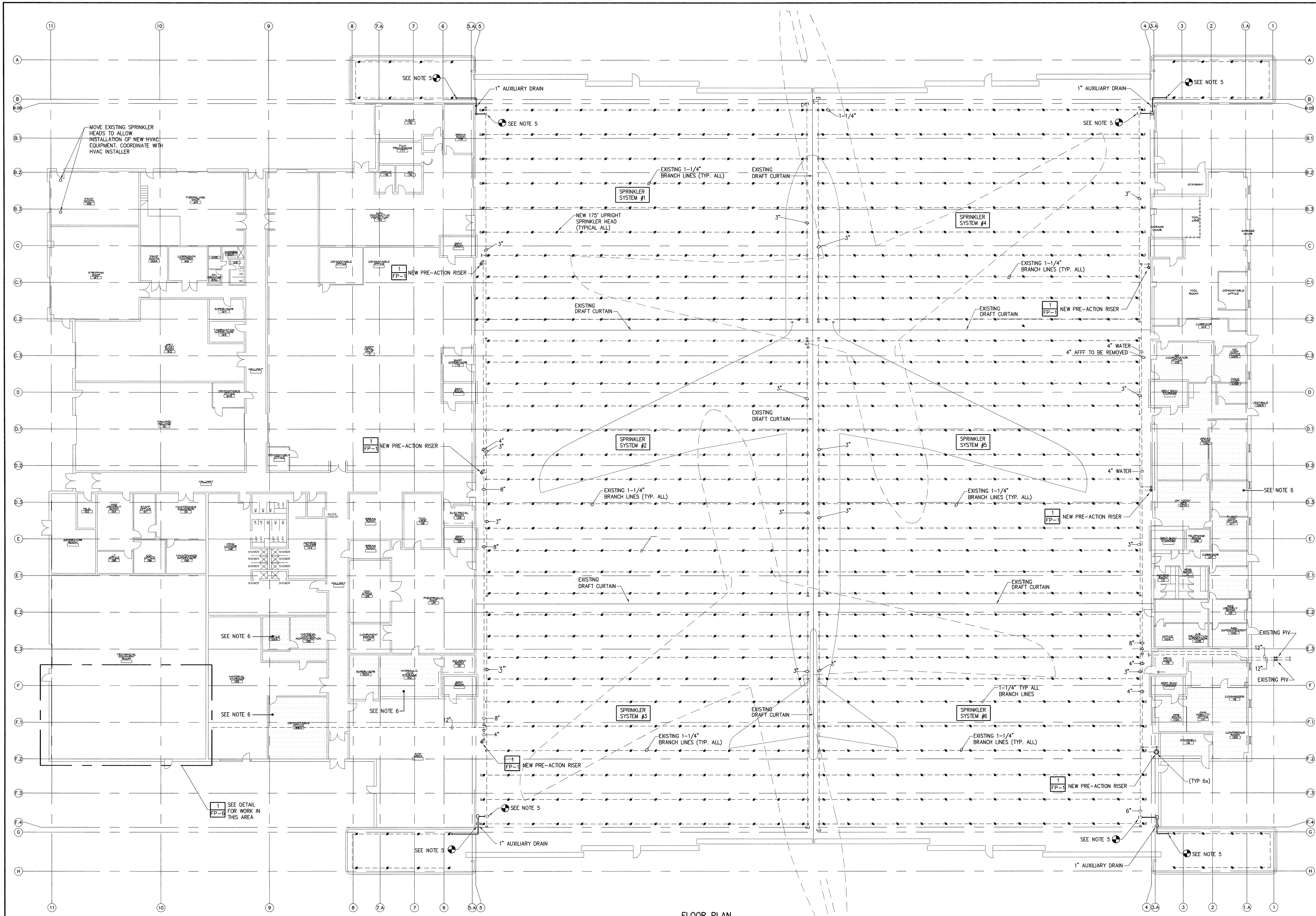


1. EXISTING FOAM MONITORS, VALVES, PIPING, FITTINGS, PLATFORMS AND SUPPLY PIPING TO BE REMOVED.
2. SEE DRAWING FP-2 FOR FURTHER REMOVAL OF SUPPLY PIPING.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER DISPOSAL OF REMOVED PIPING AND EQUIPMENT.



- ① EXISTING AFF TANKS, PIPING, VALVES AND APPURTENANCES ARE TO BE COMPLETELY REMOVED.
- ② EXISTING CONCRETE PADS ARE TO REMAIN.
- ③ 12" SUPPLY TO EXISTING PRE-ACTION RISERS IS TO REMAIN.
- ④ EXISTING 10" SUPPLY MONITOR IS TO BE CUT AT POINT SHOWN AND REMOVED OUT INTO HANGER BAY AS SHOWN. SEE DWG FP-2 FOR FURTHER REMOVALS.
- ⑤ EXISTING FOAM FILL PUMP IS TO REMAIN AND BE RE-USED.
- ⑥ REMOVE EXISTING DELUGE VALVE, CHECK VALVES, SOLENOID VALVES, PROPORTIONER, COMPRESSOR AND ALL MISC. PIPING AND FITTINGS BACK TO CONTROL VALVE. EXISTING SUPPLY PIPING FROM OVERHEAD SUPPLY RISER TO RISER CONTROL VALVE IS TO REMAIN
- ⑦ REMOVE EXISTING 8" SUPPLY TO AFF MONITOR RISERS.
- ⑧ REMOVE EXISTING 8" CHECK VALVE
- ⑨ REMOVE EXISTING 6" FIRE DEPARTMENT CONNECTION FOR AFF MONITOR RISERS. REMOVE EXISTING FIRE DEPARTMENT CONNECTION ON EXTERIOR OF BUILDING. (NOTE: EXTERIOR WALL PENETRATION LEFT FROM PIPE TO CONNECTION DOES NOT NEED TO BE PATCHED. NEW DOORS ARE BEING INSTALLED IN THIS LOCATION BY OTHERS. SEE PLAN.)
- ⑩ REMOVE EXISTING 8" FIRE DEPARTMENT CONNECTION, PIPING AND CHECK VALVE AS SHOWN. INSTALL 12" AIR FILL AND GASSET AT EXISTING FLANGE. INFILL PENETRATION IN BLOCK WALL AND GROUT SMOOTH ON INTERIOR AND EXTERIOR.

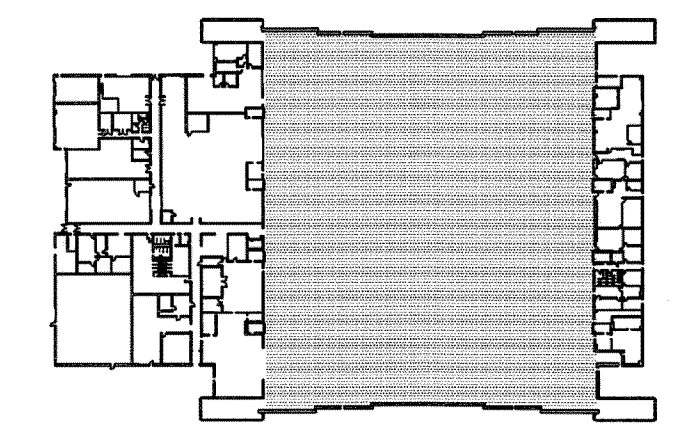
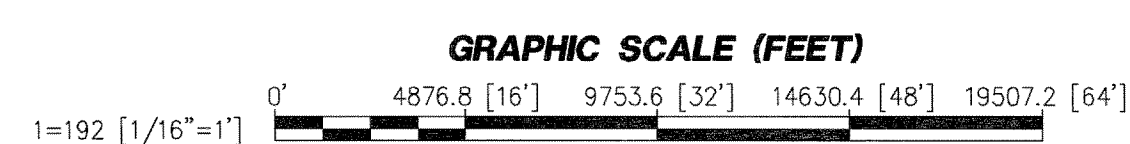
[illegible]



- SPRINKLER SYSTEM SCOPE OF WORK:**
- EXISTING OVERHEAD AFF DELUGE SYSTEMS SHALL BE CONVERTED TO WATER BASED, SINGLE PRE-ACTION SYSTEMS. THE OVERHEAD SYSTEMS SHALL UTILIZE EXISTING WATER SUPPLIES AND RISER LOCATIONS ON THE HANGAR FLOOR. SEE PLANS AND DETAILS FOR MODIFICATIONS REQUIRED ON RISERS.
 - EXISTING OVERHEAD SPRINKLER PIPING SHALL REMAIN AND BE REUSED.
 - EXISTING SPRINKLER HEADS SHALL BE REMOVED AND REPLACED WITH UPRIGHT QUICK RESPONSE HEADS WITH A TEMPERATURE RATING OF 175°F.
 - HYDRAULIC CALCULATIONS SHALL BE SUBMITTED ON SPRINKLER SYSTEMS TO PROVE SYSTEMS MEET DESIGN CRITERIA.
 - CONTRACTOR SHALL TIE IN EXISTING PIPING/HEADS IN DOOR POCKET TO OVERHEAD PRE-ACTION SYSTEM. PROVIDE AUXILIARY DRAIN WITH VALVE LOCATED 6'-0" ABOVE FINISHED FLOOR OF MAINTENANCE BAY. CONTRACTOR SHALL ADJUST PITCH OF EXISTING PIPING IN DOOR POCKET SO THAT PIPING DRAINS COMPLETELY TO AUXILIARY DRAIN.
 - SHADED AREAS SHOWN ARE PROTECTED BY EXISTING LIGHT HAZARD SPRINKLER SYSTEMS. CONTRACTOR SHALL REMOVE EXISTING HEADS AND MAKE BRANCH LINE PIPING MODIFICATIONS NECESSARY TO ACCOMMODATE FLOOR PLAN CHANGES AND CEILING MODIFICATIONS IN THESE AREAS BY OTHERS. CONTRACTOR SHALL THEN INSTALL NEW HEADS IN ALL SHADED AREAS. HEAD LAYOUTS, PIPING MODIFICATIONS AND INSTALLATION SHALL BE COORDINATED WITH OTHER TRADES.

- MAINTENANCE BAY
SPRINKLER SYSTEM DESIGN CRITERIA:**
- DESIGN DENSITY: .20 GPM PER SQ. FT.
 - DESIGN AREA: HYDRAULICALLY MOST REMOTE 5,000 SQ. FT.

FLOOR PLAN
SCALE: 1" = 192' [1/16" = 1'-0"]

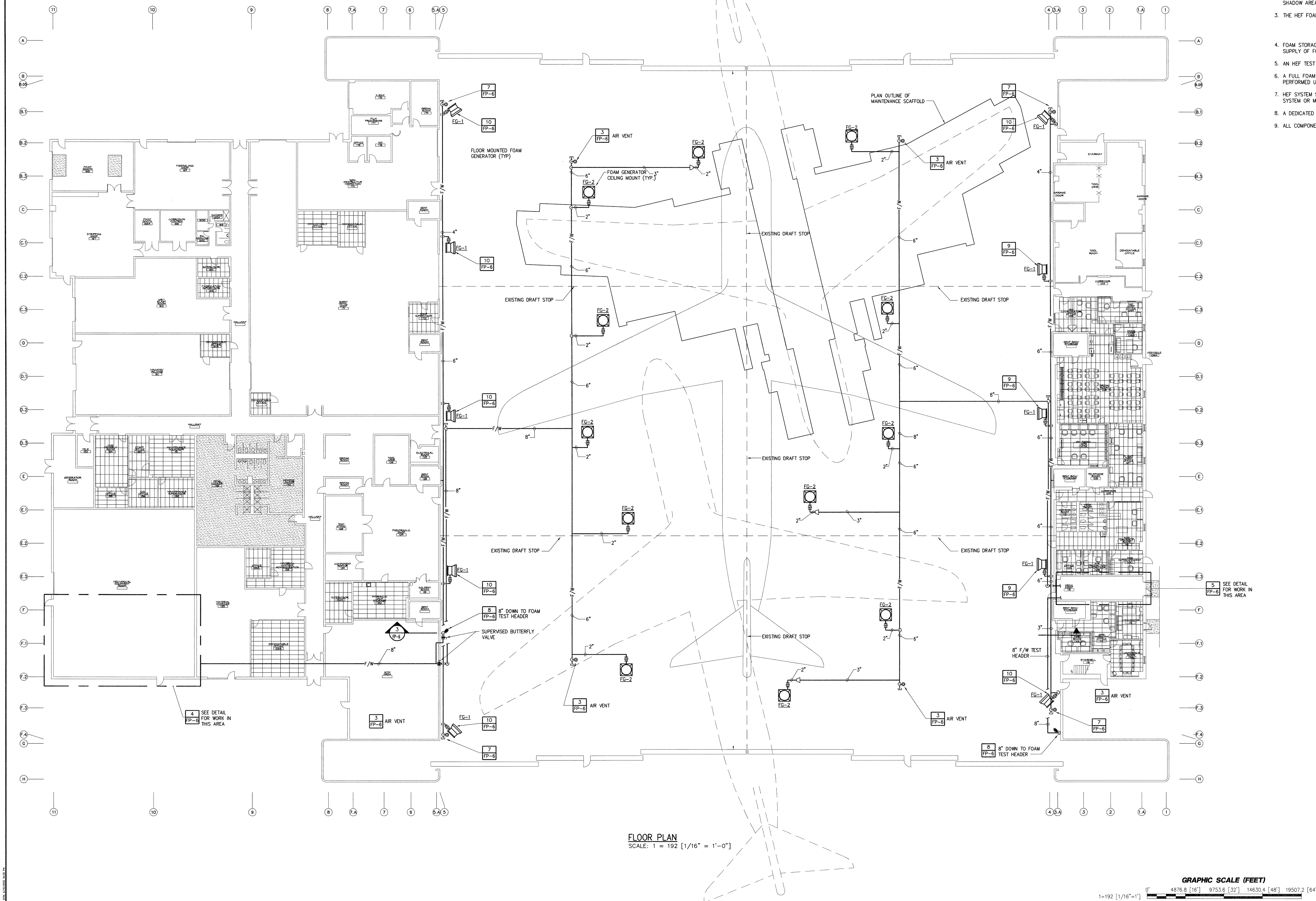


KEY PLAN

Revisions:				Drawn By:	App'd. By:	Date:												

HIGH EXPANSION FOAM SYSTEM DESIGN CRITERIA:

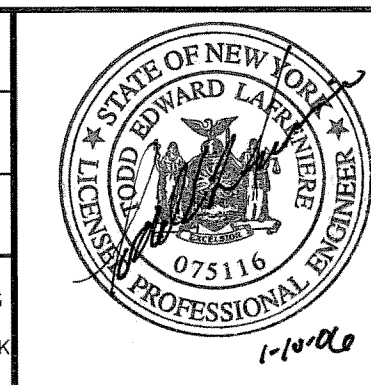
1. THE HIGH EXPANSION FOAM (HEF) SYSTEM SHALL UTILIZE WATER POWERED GENERATORS HUNG FROM THE CEILING AND LOCATED ON STANDS ALONG WALLS.
2. THE HEF SYSTEM SHALL BE DESIGNED TO COVER THE AIRCRAFT SERVING AREA AND ADJACENT ACCESSIBLE AREAS TO A DEPTH OF 3.2 FEET (1 METER) IN 4 MINUTES OR LESS. GENERATORS SHALL BE POSITIONED WITH REGARD TO THE APPROVED "NORMAL" BASE PARKING PLAN AND SHALL BE CAPABLE OF COVERING 30% OF THE AIRCRAFT SHADOW AREA IN THE FIRST 60 SECONDS FROM INITIATION OF THE SYSTEM.
3. THE HEF FOAM SYSTEM SHALL BE SUPPLIED BY 2 RISERS, LOCATED A
4. FOAM STORAGE TANKS SHALL BE SIZED FOR 15 MINUTES OF DISCHARGE WITH NO BACKUP SUPPLY OF FOAM PROVIDED. TANKS SHALL BE HORIZONTAL BLADDER TYPE.
5. AN HEF TEST HEADER SHALL BE PROVIDED FOR EACH FOAM SYSTEM.
6. A FULL FOAM FLOW TEST FLOWING FOAM THROUGH ALL GENERATORS SHALL BE PERFORMED UPON SYSTEM COMPLETION TO PROVE SYSTEM MEETS DESIGN CRITERIA.
7. HEF SYSTEM SHALL BE CAPABLE OF BEING TRIGGERED FROM THE OVER HEAD DETECTION SYSTEM OR MANUAL PULL STATIONS.
8. A DEDICATED FOAM SUPPRESSION CONTROL PANEL SHALL BE PROVIDED.
9. ALL COMPONENTS OF THE HEF SYSTEM SHALL BE BY THE SAME MANUFACTURER.



Revisions:	Drawn By:	App'd. By:	Date:

Designed By:	Date:
DMW	06/16/05
Drawn By:	Date:
PUL	06/15/05
Checked By:	Date:
TEL	4/10/06


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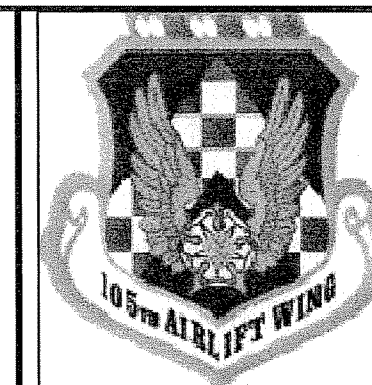


**SRG**
STRACHER ROTH GILMORE
ARCHITECTS

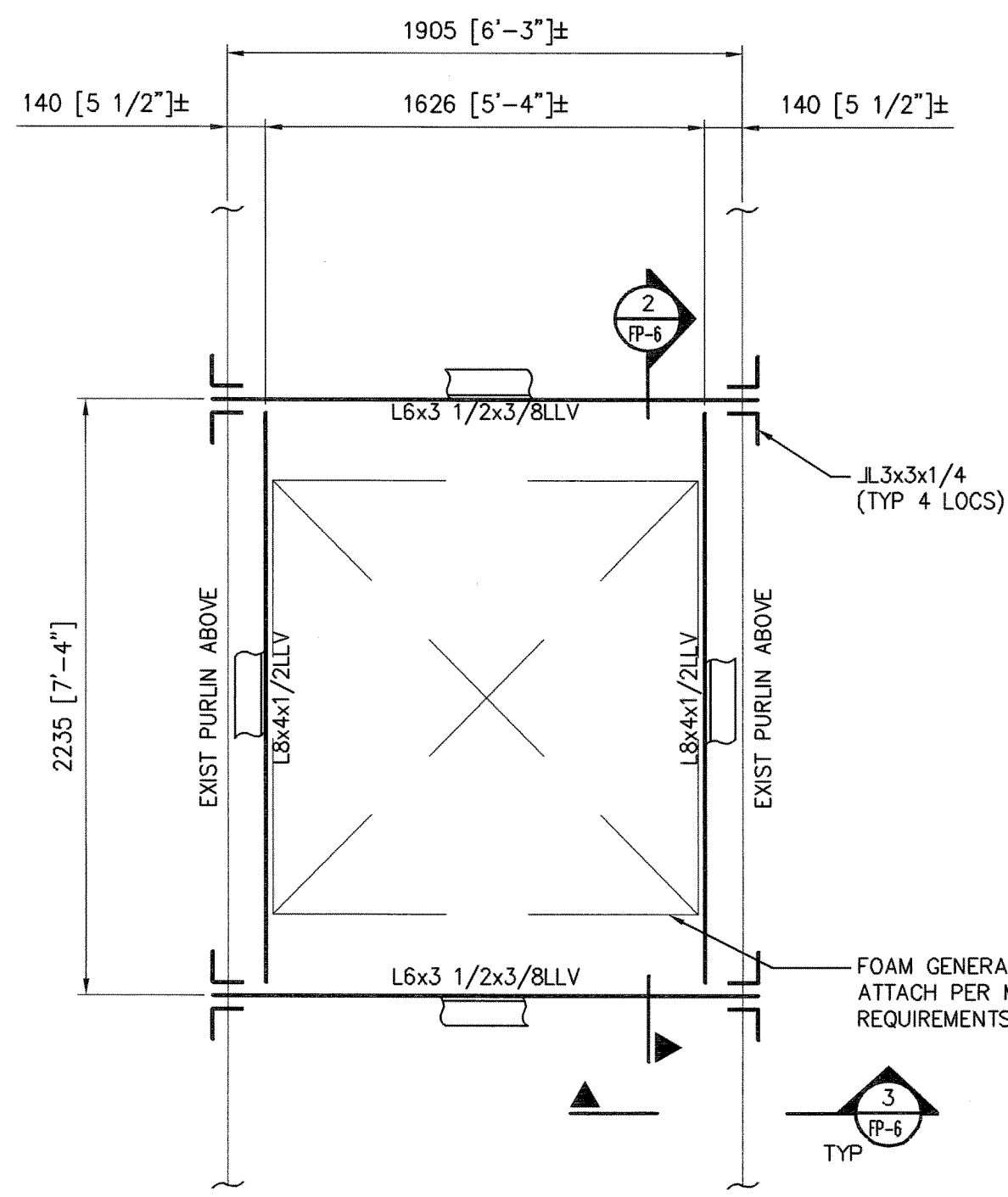
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111 Winners Circle, PO Box 5269, Albany, NY 12205
www.cloughharbour.com
CHA Project No. 12726



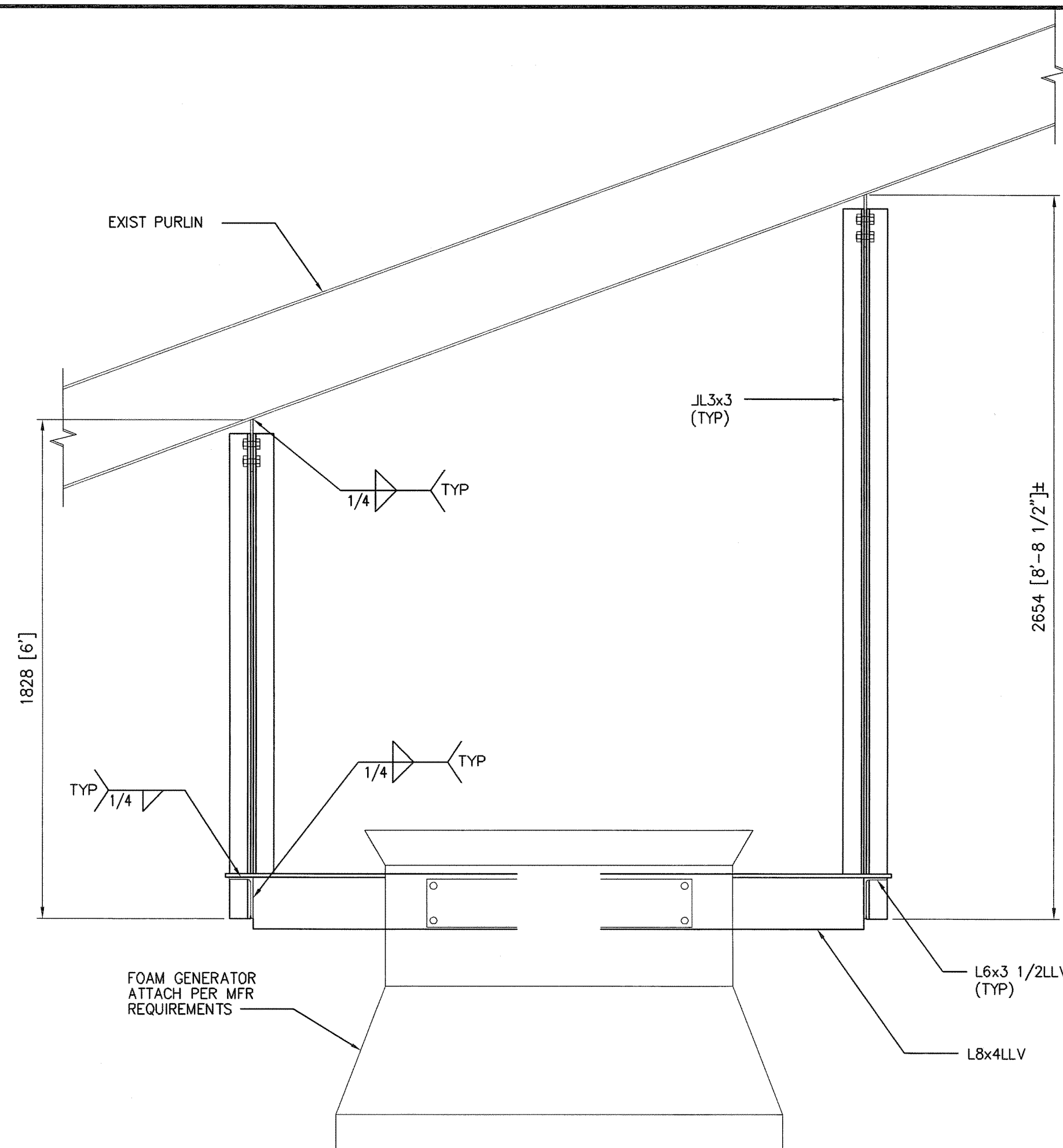
ALL DIMENSIONS ARE MILLIMETERS (MM) UNLESS OTHERWISE NOTED		
MAIN HANGAR FOAM SUPPRESSION SYSTEM: BUILDING 100 STEWART AIR NATIONAL GUARD BASE, NEWBURGH, NEW YORK		Drawing No.
HANGAR BAY HI EXPANSION FOAM SYSTEM NEW WORK PLAN		FP-5
SCALE: AS SHOWN	DATE: JANUARY 2006	



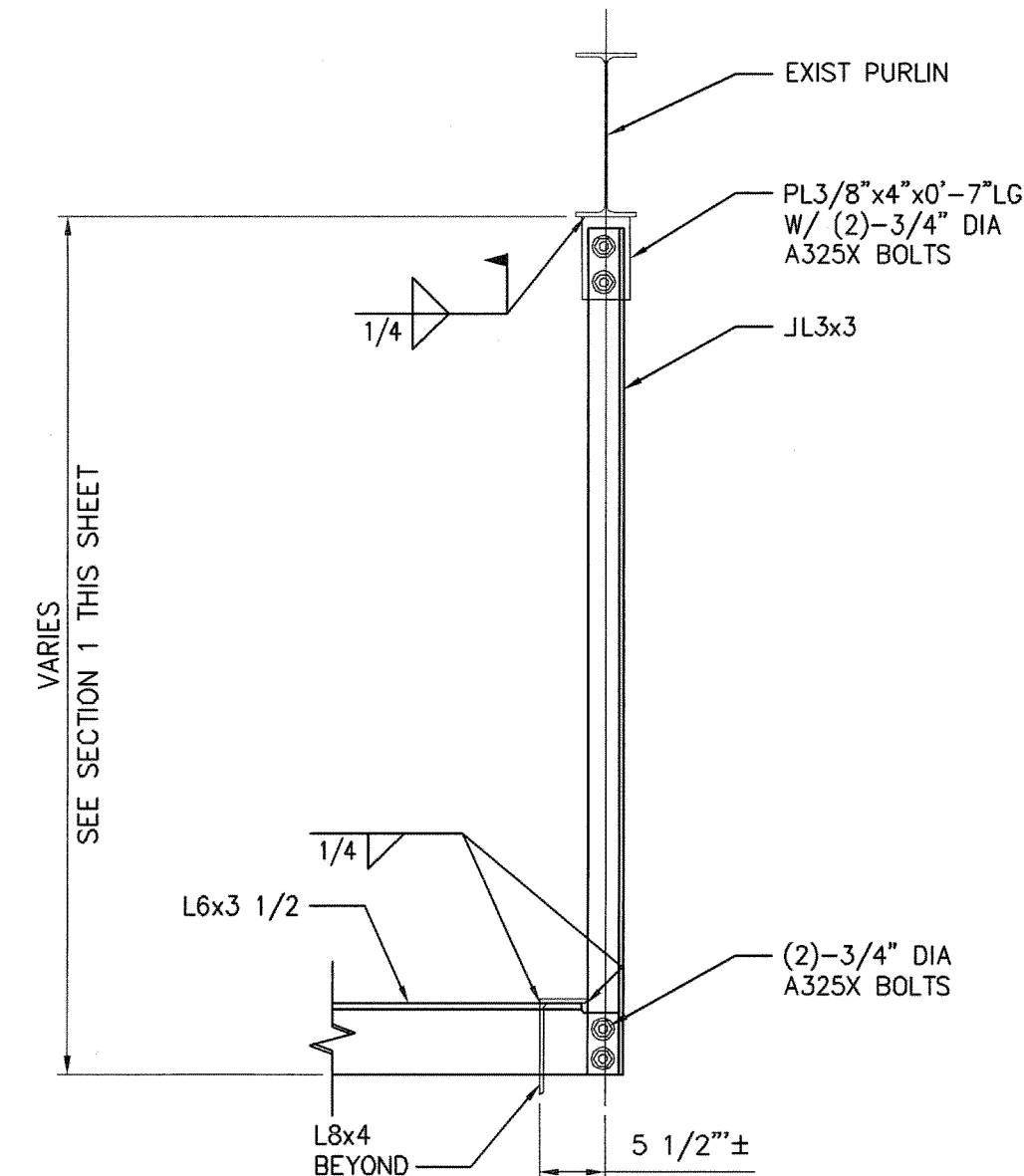
1 FOAM GENERATOR SUPPORT FRAME
FP-5 SCALE: 1/2" = 1'-0"

NOTES:

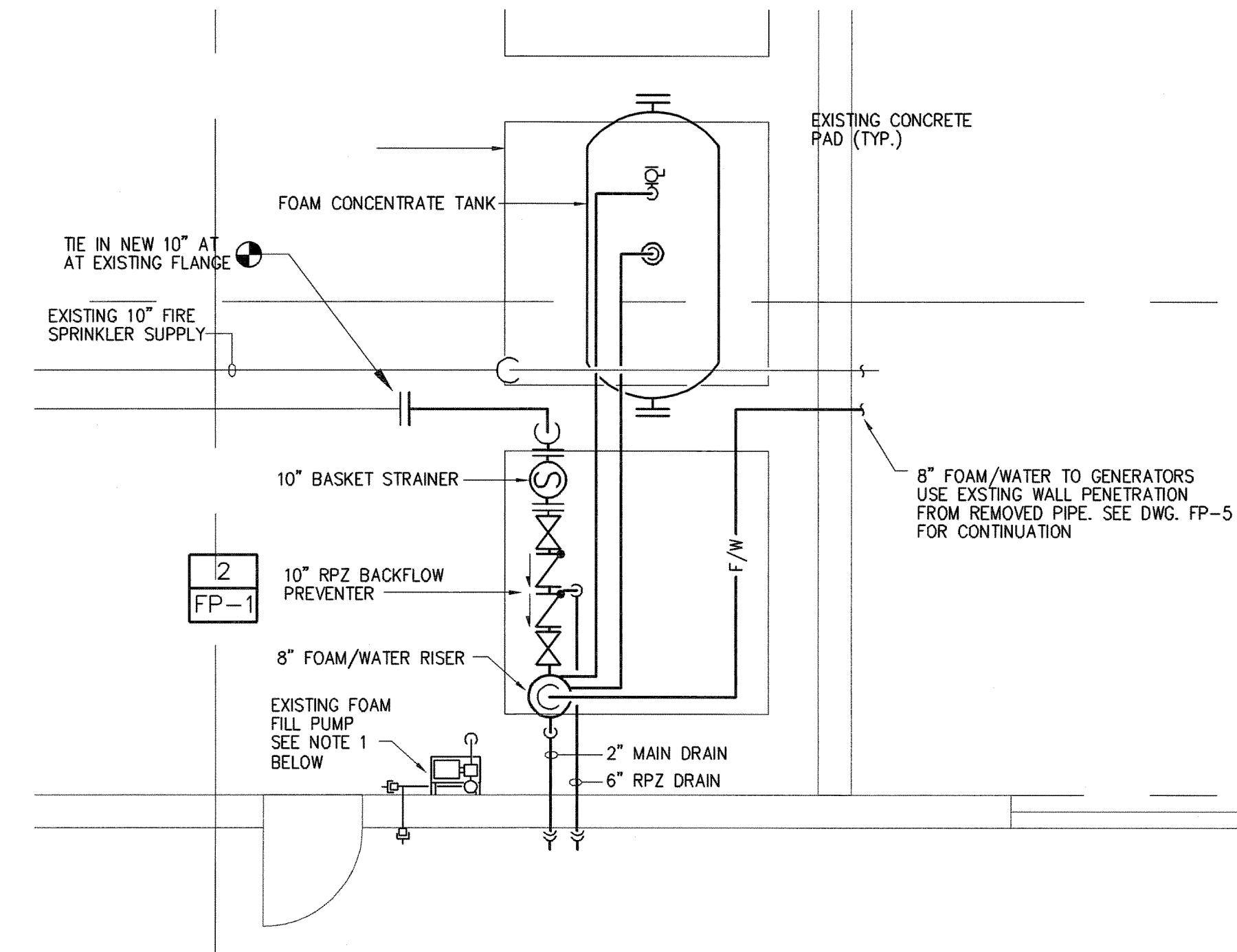
- FOR LOCATIONS REQUIRED SEE FIRE PROTECTION DRAWINGS.
- COORDINATE EXACT FRAMING DIMENSIONS WITH FOAM GENERATOR REQUIREMENTS.



2 SECTION
FP-6 SCALE: 3/4" = 1'-0"



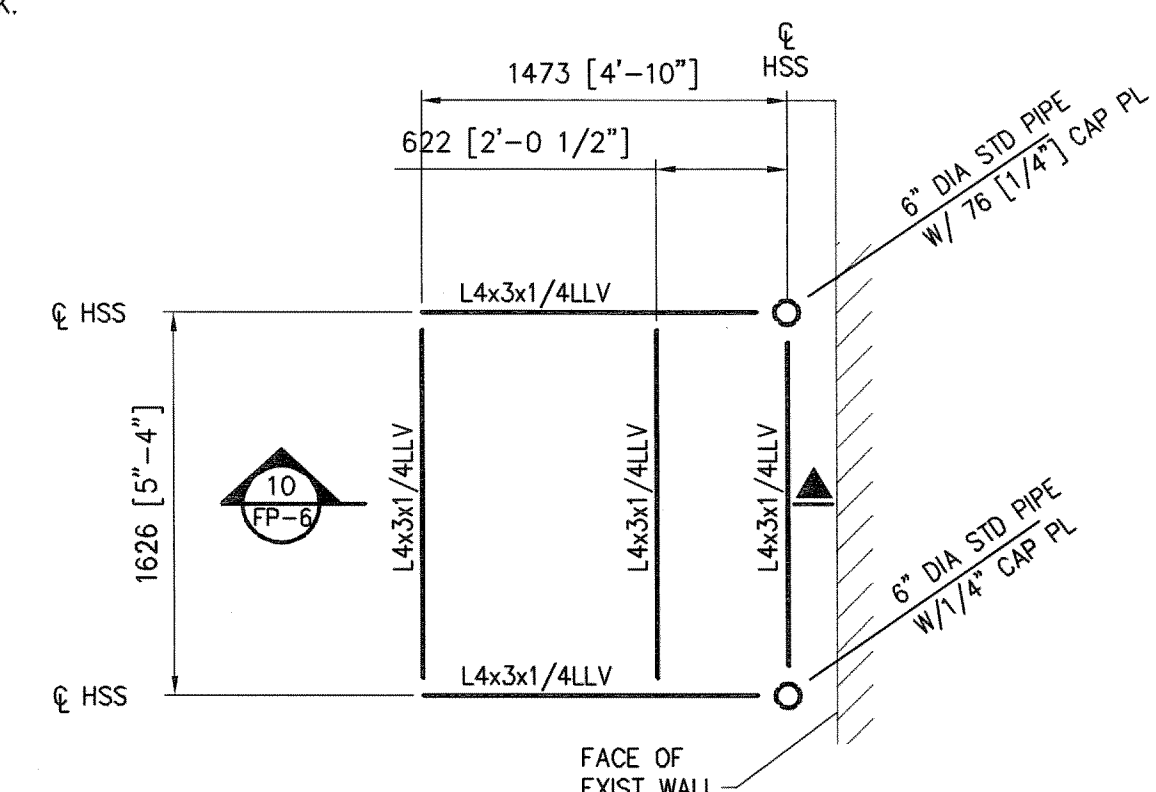
3 SECTION
FP-6 SCALE: 3/4" = 1'-0"



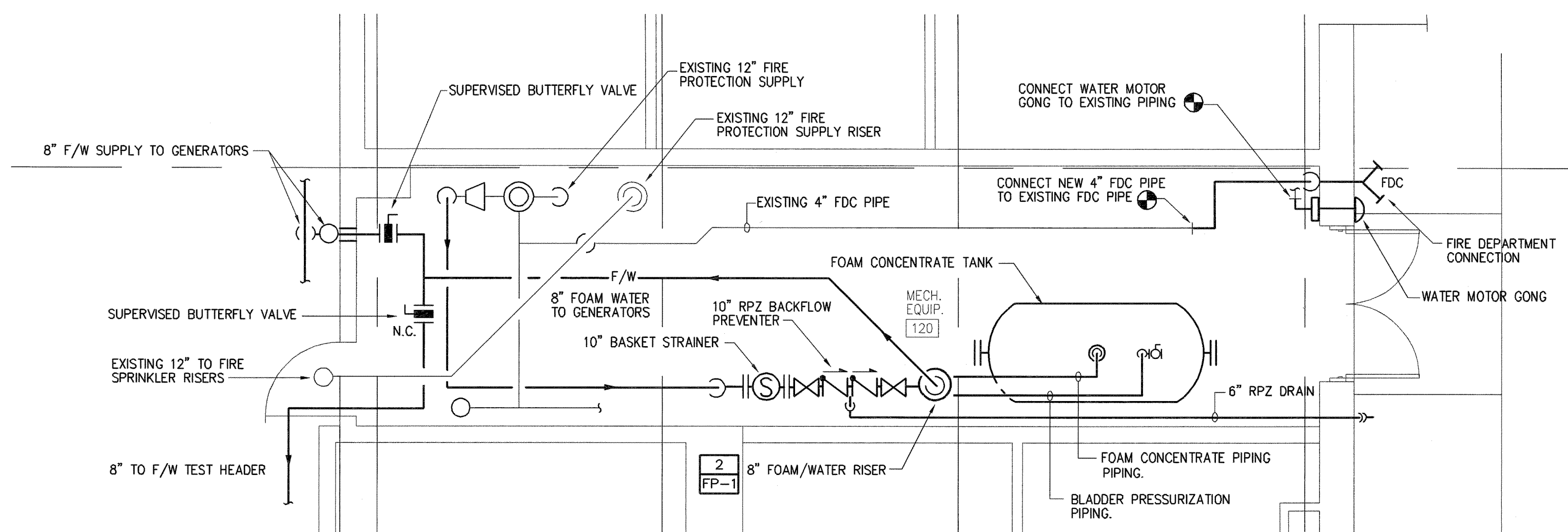
4 ENLARGED PLAN - SOUTH MECHANICAL ROOM
FP-5 SCALE: 1 = 96 [1/8" = 1'-0"]

NOTES:

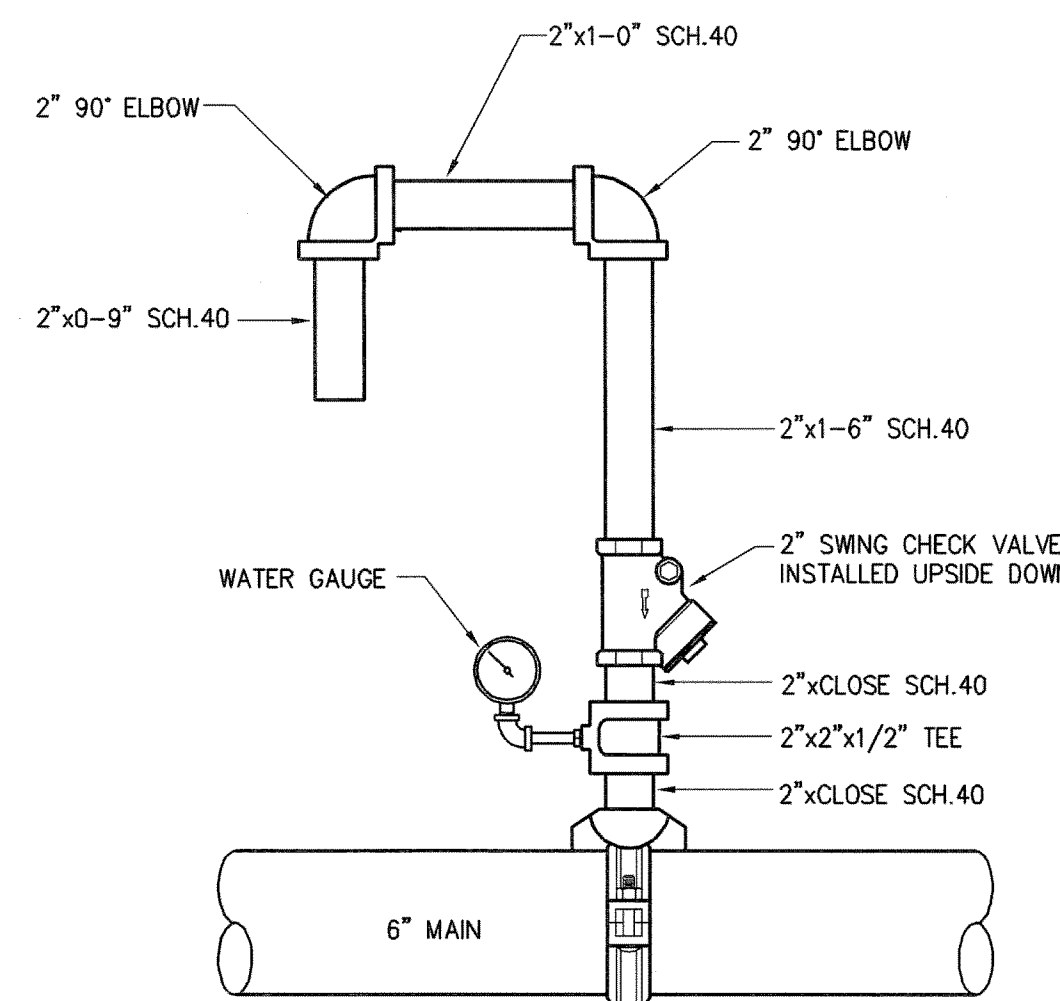
- CONNECT EXISTING FOAM FILL PUMP TO NEW BLADDER TANK.



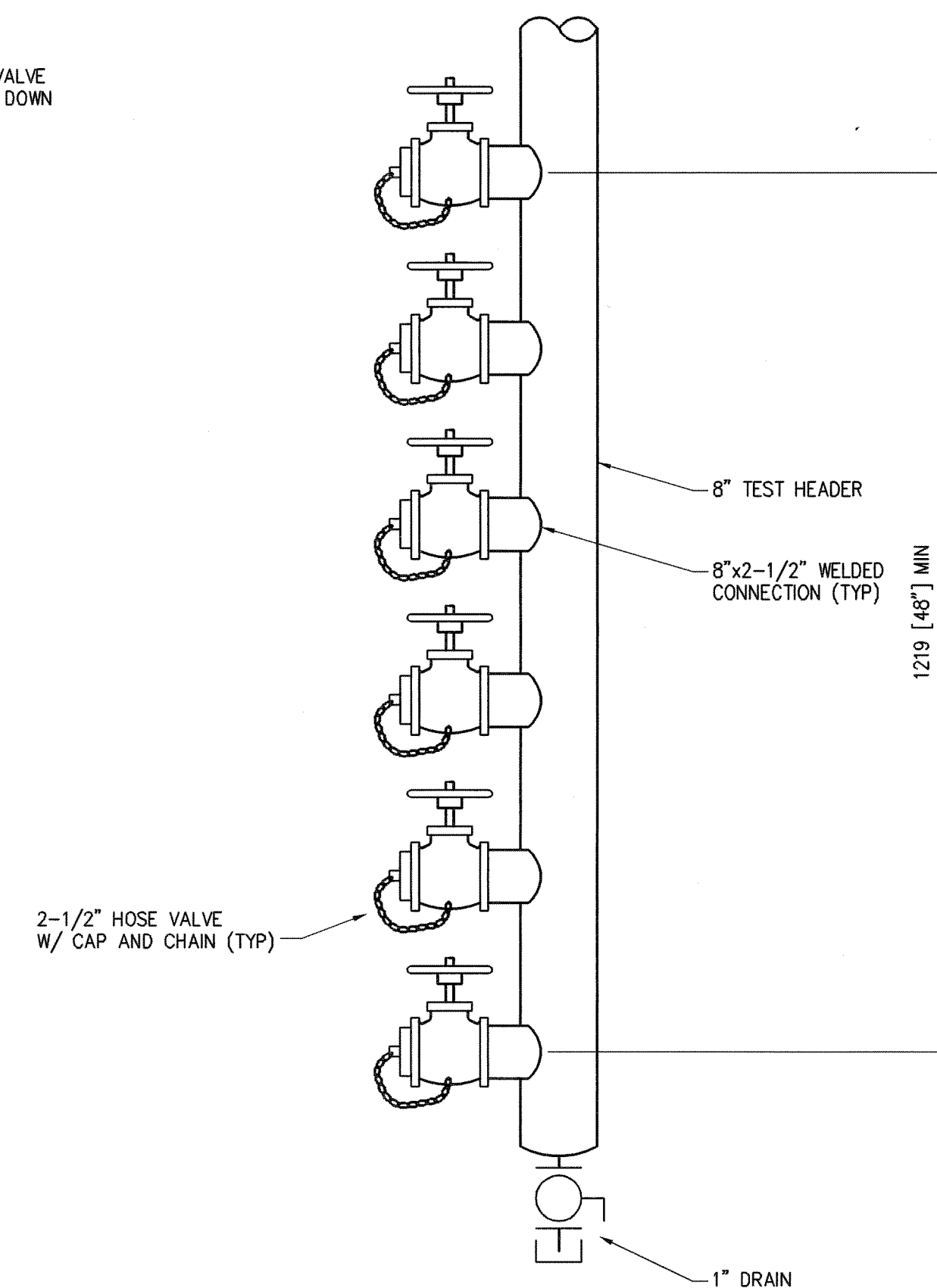
9 FOAM GENERATOR STAND PLAN
FP-6 SCALE: 1/8" = 1'-0"



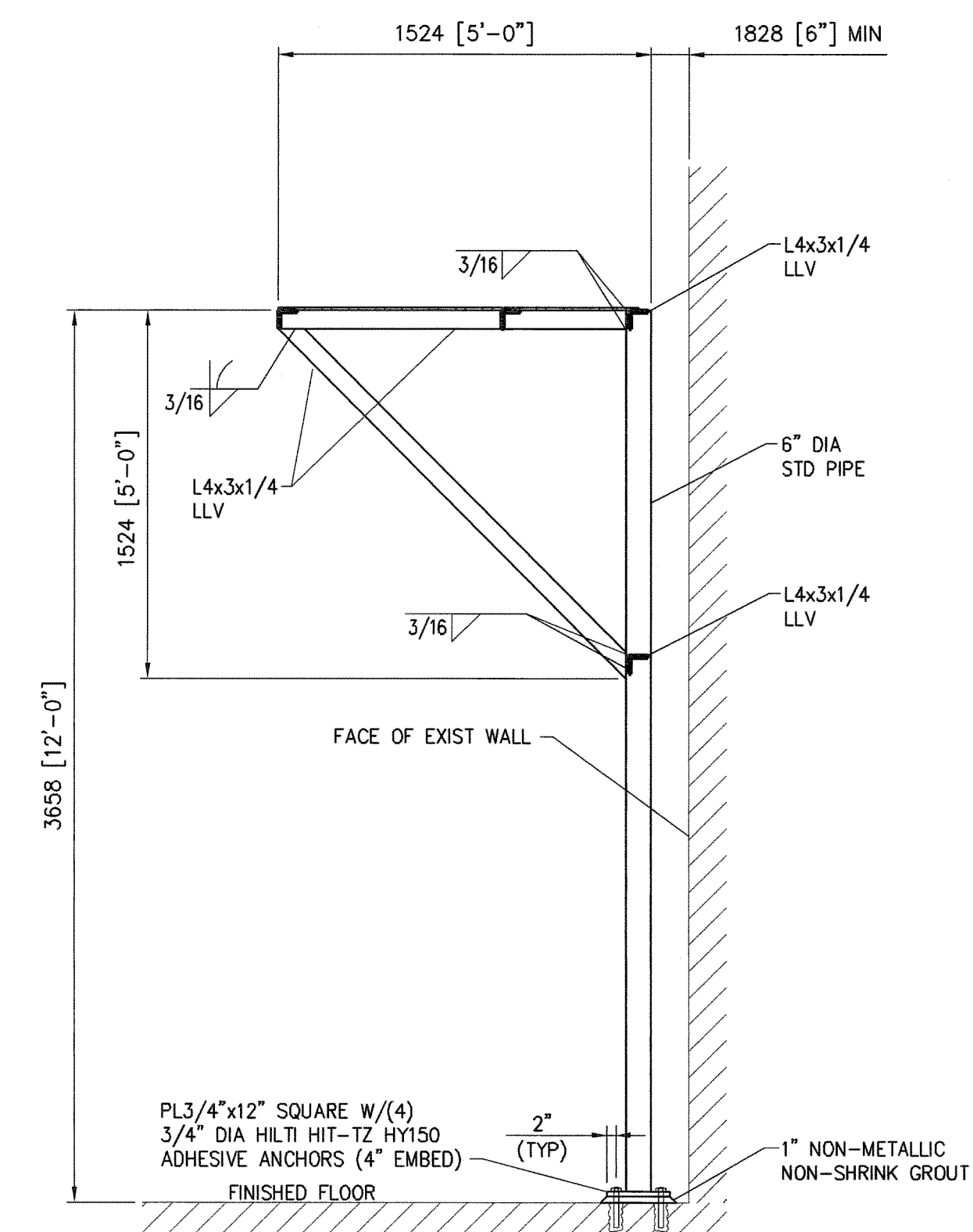
5 ENLARGED PLAN - NORTH MECHANICAL ROOM
FP-5 SCALE: 1 = 48 [1/4" = 1'-0"]



7 AIR VENT
FP-5 SCALE: NOT TO SCALE



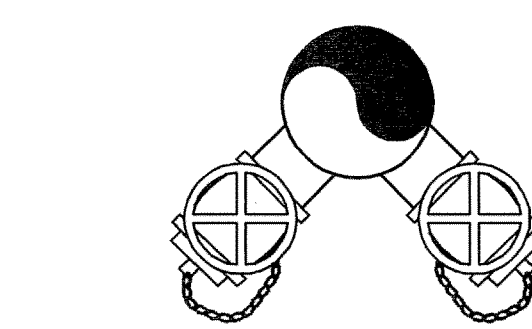
8 FOAM TEST HEADER
FP-5 SCALE: NOT TO SCALE



10 SECTION
FP-6 SCALE: 1/8" = 1'-0"

NOTES:

- STRUCTURAL STEEL: PIPES A53, GRADE B, Fy = 36KSI
STEEL PLATES A36, Fy = 36KSI
- WELD ELECTRODES E70XX AND IN ACCORDING WITH A.W.S.
- NON-METALLIC, NON-SHRINK GROUT: EUCCO N.S. BY EUCCO CHEMICAL COMPANY OR APPROVED EQUAL
- PAINT: SURFACE PREPARATION: SSPC-SP6
SHOP PRIME: SERIES 10 INMEC PRIMER, 3.0 MILS BY INMEC CO. (OR EQUAL)
FIELD INTERMEDIATE: SERIES 23 ENDURATONE, 3.0 MILS BY INMEC CO. (OR EQUAL)
FIELD FINISH: SERIES 23 ENDURATONE, 3.0 MILS BY INMEC CO. (OR EQUAL)



FOAM TEST HEADER PLAN
SCALE: NOT TO SCALE

ALL DIMENSIONS ARE MILLIMETERS (MM) UNLESS OTHERWISE NOTED

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6 SECTION
FP-5 SCALE: 1/16" = 1'-0"

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Drawn By:	Date:
P.J.L	06/16/05
Checked By:	Date:
TEL	6/16/06

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MAIN HANGAR FOAM SUPPRESSION SYSTEM: BUILDING 100
STEWART AIR NATIONAL GUARD BASE,
NEWBURGH, NEW YORK

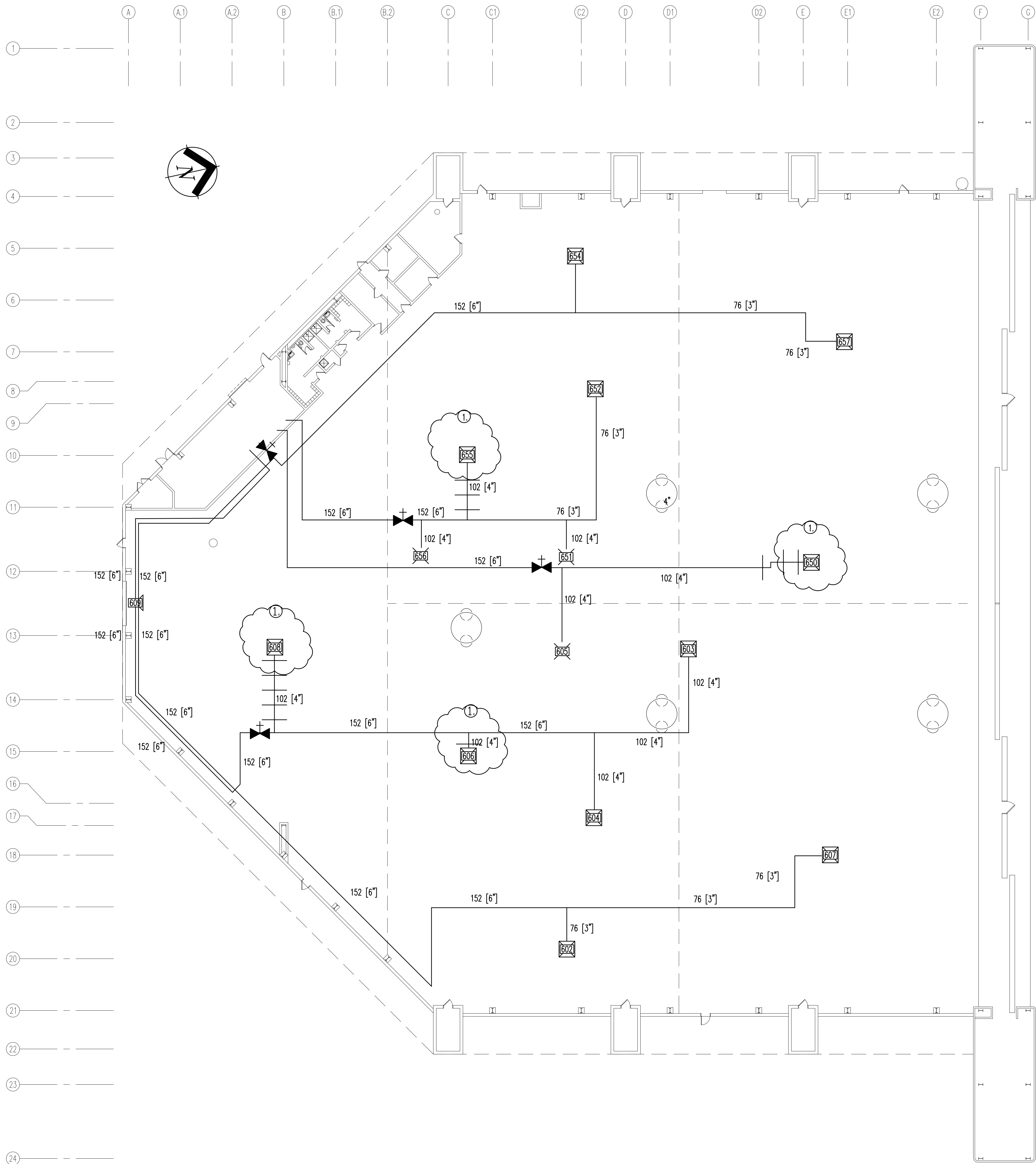
FIRE PROTECTION
DETAILS

SCALE: AS SHOWN

DATE: JANUARY 2006

FP-6

HANGAR 101



GENERAL NOTES

1. SEE F001 FOR GENERAL NOTES AND SYMBOLS.
2. EXTENT OF DEMOLISHED PIPING IS SCHEMATIC IN NATURE, REMOVE ALL, AND ONLY, PIPING NECESSARY TO ACCOMPLISH THE WORK.
3. RETAIN ALL AIR VENTS LOCATED ON PIPING TO BE DEMOLISHED

NOTES BY SYMBOL

1. RETAIN EXISTING FOAM GENERATORS AND SUPPORTS FOR REUSE.

**FIRE SUPPRESSION DEMOLITION PLAN
BUILDING 101**

SCALE: 1 : 200

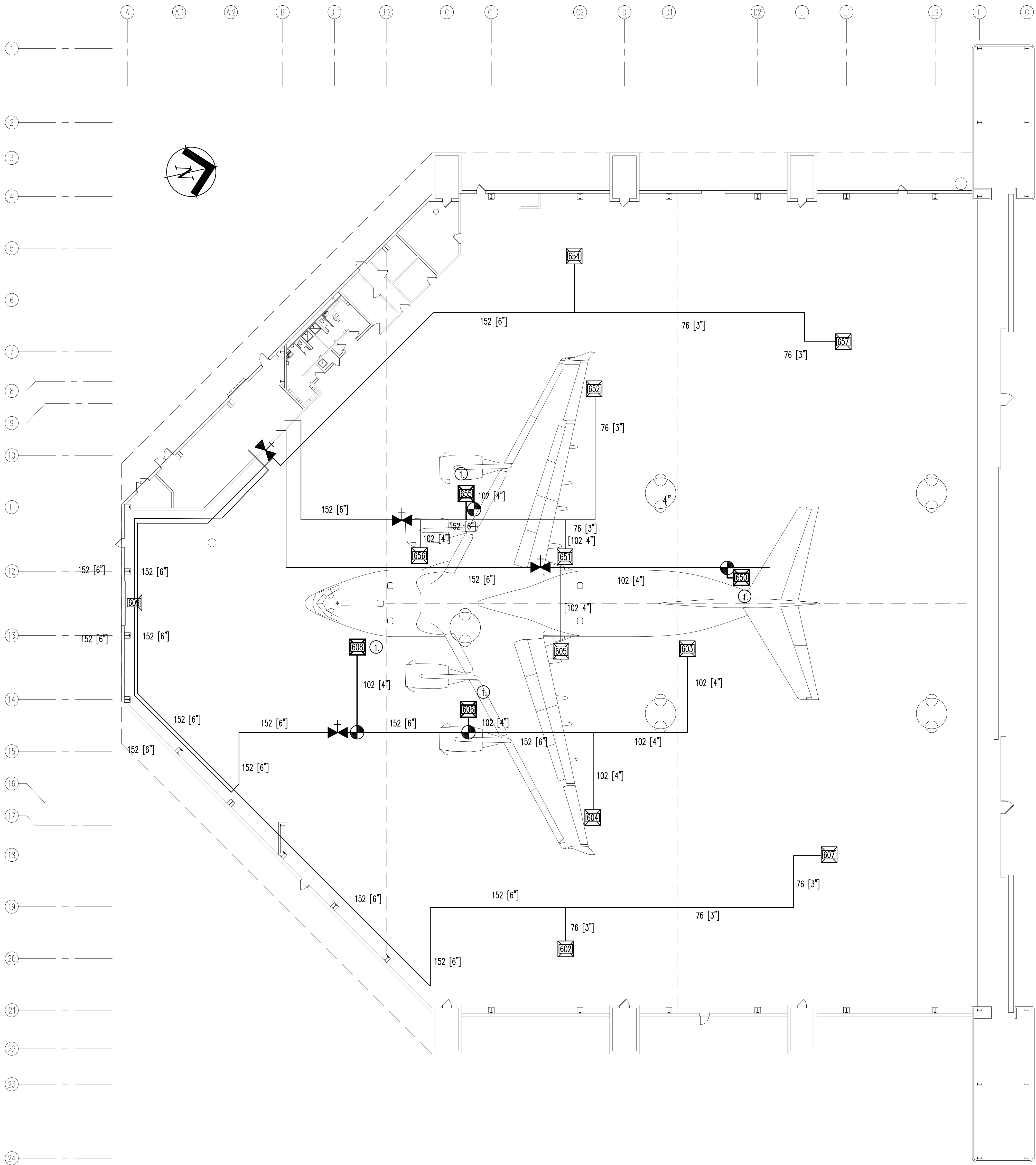
0m 5m 10m 15m 20m
SCALE 1 : 200

ALL ELEVATIONS AND DIMENSIONS ARE IN MILLIMETERS AND ARE APPROXIMATE. IMPERIAL UNITS ARE SHOWN IN BRACKETS.

		KIN CHOW LIC. No. 061219-1	
Revision	Description	Date	Approved



RECONFIGURE MAINTENANCE COMPLEX FOR C17 PROJECT WHAY112001 105TH AIRLIFT WING - NEW YORK AIR NATIONAL GUARD STEWART AIRPORT NEWBURGH, NEW YORK			
Drawing Title: BUILDING 101 FIRE SUPPRESSION DEMOLITION PLAN			
 DEPARTMENTS OF THE ARMY AND THE AIR FORCE WASHINGTON D.C.	Designed By: PRS	Drawn By: PRS	Sheet Reference Number F200
	Checked By: PRS	Date: 4/6/12	
	In Charge: KC	Scale: AS SHOWN	
			Sheet 56 of 61



GENERAL NOTES

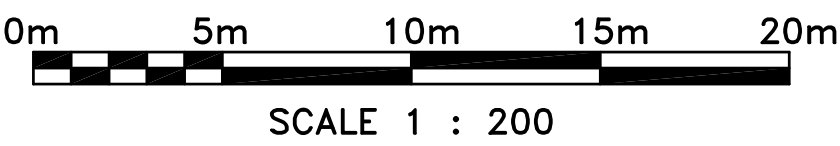
1. SEE F001 FOR GENERAL NOTES AND SYMBOLS.
2. LOCATION OF CONNECTION POINTS TO EXISTING SYSTEM ARE SCHEMATIC IN NATURE, COORDINATE ALL PIPING WITH DEMOLITION AS NECESSARY TO ACCOMPLISH THE WORK.

NOTES BY SYMBOL

1. REINSTALL EXISTING FOAM GENERATOR

FIRE SUPPRESSION FLOOR PLAN
BUILDING 101

SCALE: 1 : 200

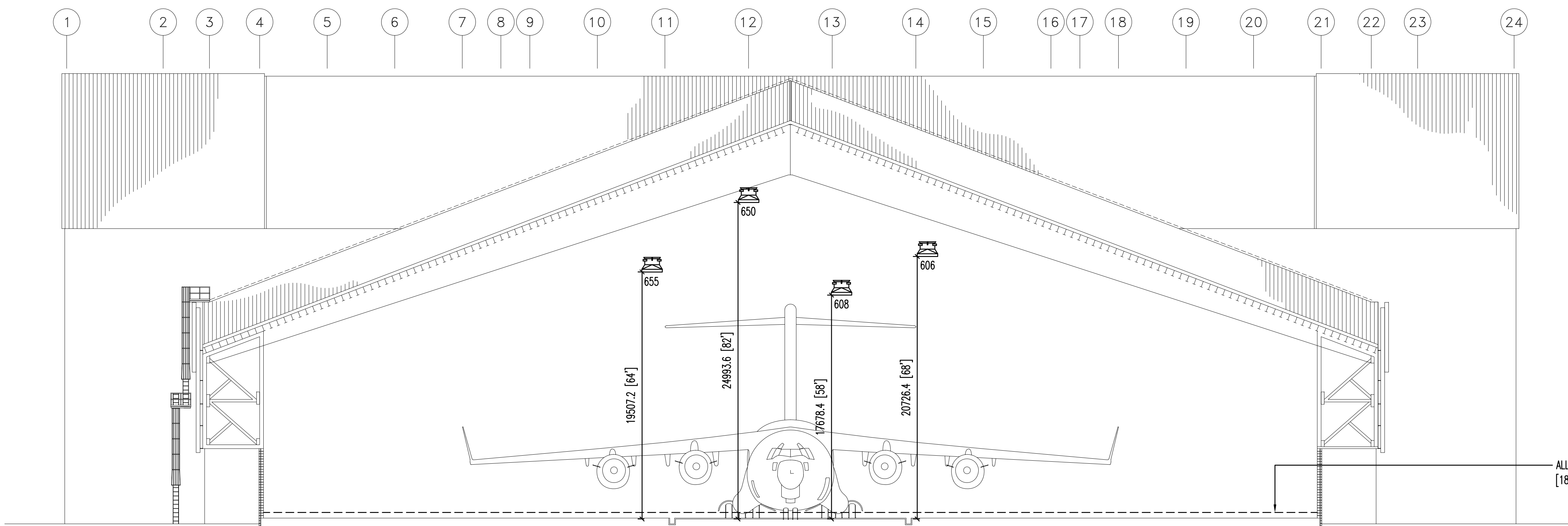


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		KIN CHOW LIC. No. 061219-1	
Revision	Description	Date	Approved



RECONFIGURE MAINTENANCE COMPLEX FOR C17 PROJECT WHAY112001 105TH AIRLIFT WING - NEW YORK AIR NATIONAL GUARD STEWART AIRPORT NEWBURGH, NEW YORK			
Drawing Title: BUILDING 101 FIRE SUPPRESSION PLAN			
 DEPARTMENTS OF THE ARMY AND THE AIR FORCE WASHINGTON D.C.	Designed By: PRS	Drawn By: PRS	Sheet Reference Number F201
	Checked By: PRS	Date: 4/6/12	
	In Charge: KC	Scale: AS SHOWN	Sheet 57 of 61



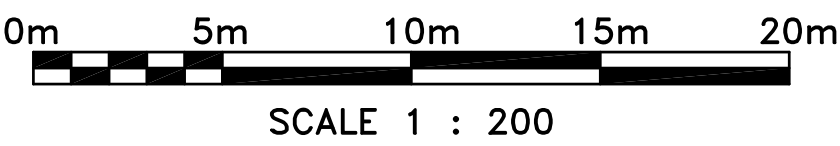
GENERAL NOTES

1. SEE F001 FOR GENERAL NOTES AND SYMBOLS.
2. VERIFY ELEVATIONS OF FOAM GENERATORS IN FIELD. INTENT IS THAT BOTTOM OF GENERATOR BE AT THE PROJECTED LOWER EDGE OF TRUSS.

ALL AREAS ARE CLASSIFIED AS CLASS I, DIVISION II UP TO 457
[18"] ABOVE HANGAR FLOOR

FIRE SUPPRESSION SECTION
BUILDING 101

SCALE: 1 : 200




ALL ELEVATIONS AND DIMENSIONS ARE IN MILLIMETERS AND
ARE APPROXIMATE. IMPERIAL UNITS ARE SHOWN IN BRACKETS.

		KIN CHOW LIC. No. 061219-1	
Revision	Description	Date	Approved

RECONFIGURE MAINTENANCE COMPLEX FOR C17
PROJECT WHAY112001
105TH AIRLIFT WING - NEW YORK AIR NATIONAL GUARD
STEWART AIRPORTNEWBURGH, NEW YORK

Drawing Title:
**BUILDING 101
FIRE SUPPRESSION SECTION**



**National
Guard
Bureau**
**DEPARTMENTS OF
THE ARMY AND
THE AIR FORCE**
WASHINGTON D.C.

Designed By:
PRS

Checked By:
PRS

In Charge:
KC

Drawn By:
PRS

Date:
4/6/12

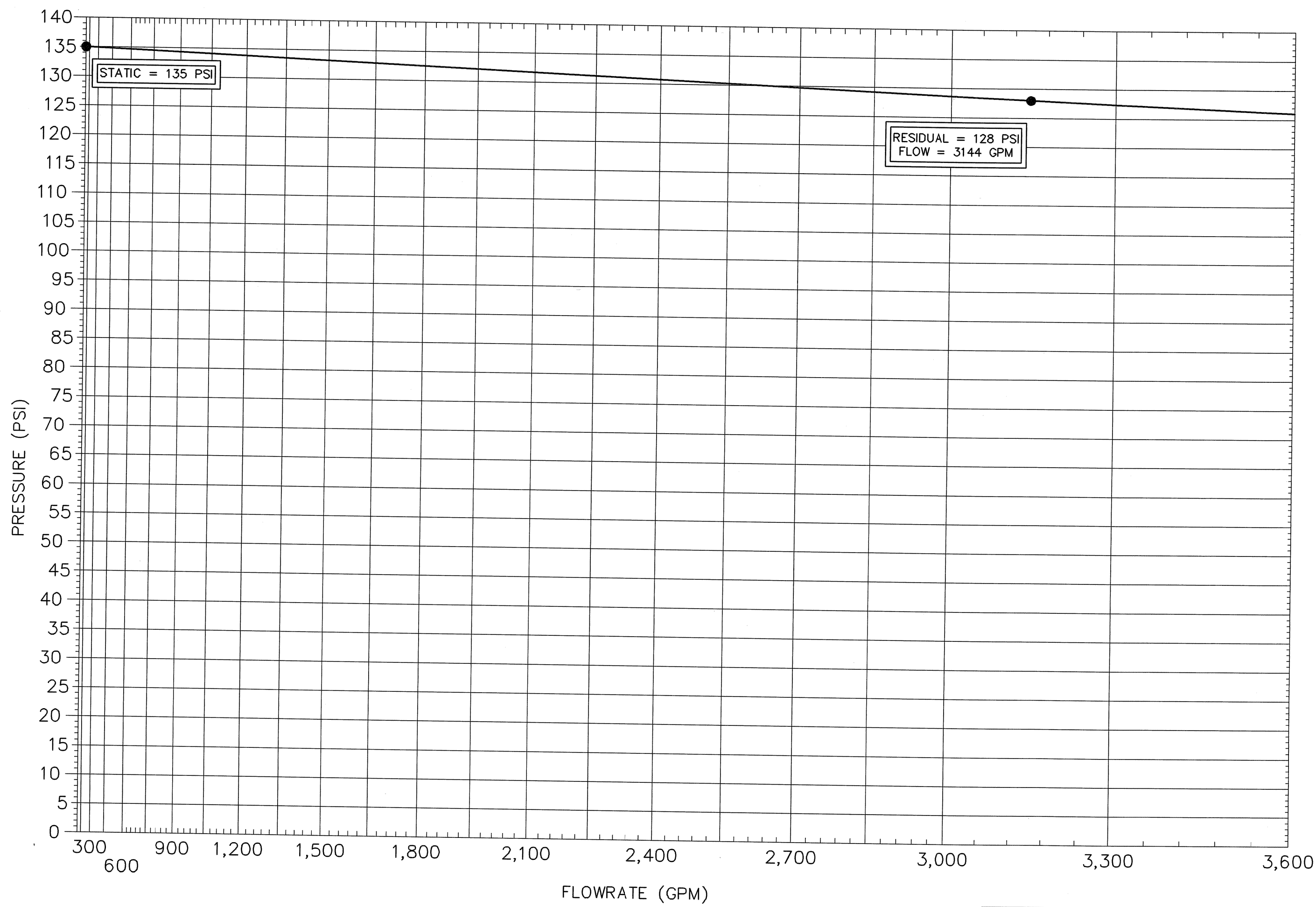
Scale:
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Sheet Reference
Number
F202

Sheet **58** of **61**

HANGAR 102

[illegible][illegible]



FIRE PROTECTION WATER SUPPLY DATA

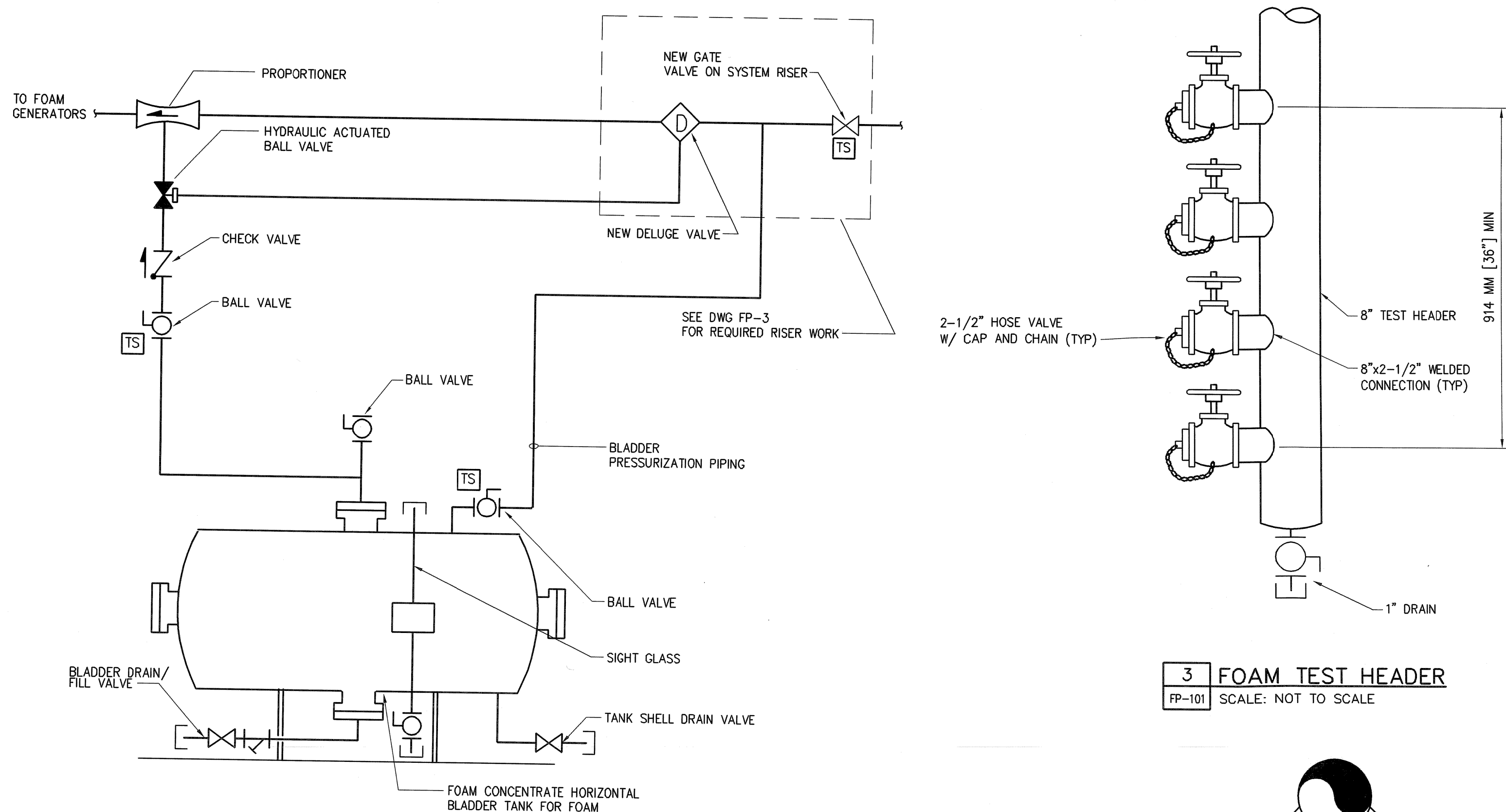
WATER FLOW TEST CONDUCTED ON 11-3-03. HYDRANT 30 GAUGED. HYDRANT 31 FLOWED. HYDRANTS ARE LOCATED NEAR HANGARS 300 AND 301.

WET PIPE SPRINKLER HEAD SCHEDULE							
TYPE	NOM. ORIFICE SIZE	THREAD SIZE	K-FACTOR	TEMP. RATING	FINISH	MFGR.	MODEL
UPRIGHT	1/2"	1/2"/3/4"	5.5/8.0	175°	BRASS	VIKING	MICROFAST HP MODEL M
CONCEALED	1/2"	1/2"	5.6	153°	WHITE	VIKING	VK302
UPRIGHT	1/2"	1/2"	5.6	153°	BRASS	VIKING	MICROFAST MODEL M

1 CONTRACTOR SHALL SELECT K-FACTOR THAT IS LEAST HYDRAULICALLY DEMANDING.

FOAM GENERATOR SCHEDULE						
LABEL	BASIS OF DESIGN	INLET PRESSURE	SOLUTION FLOW	FOAM OUTPUT	EXPANSION RATIO	REMARKS
FG-1	ANSUL JET X 15A UL	75 PSI	128 GPM	17,410 CFM	900:1	CEILING HUNG - PROVIDE MISC. STEEL FOR HANGING
FG-2	ANSUL JET X 2A	75 PSI	42 GPM	3,200 CFM	900:1	WALL HUNG - PROVIDE MISC. STEEL FOR HANGING

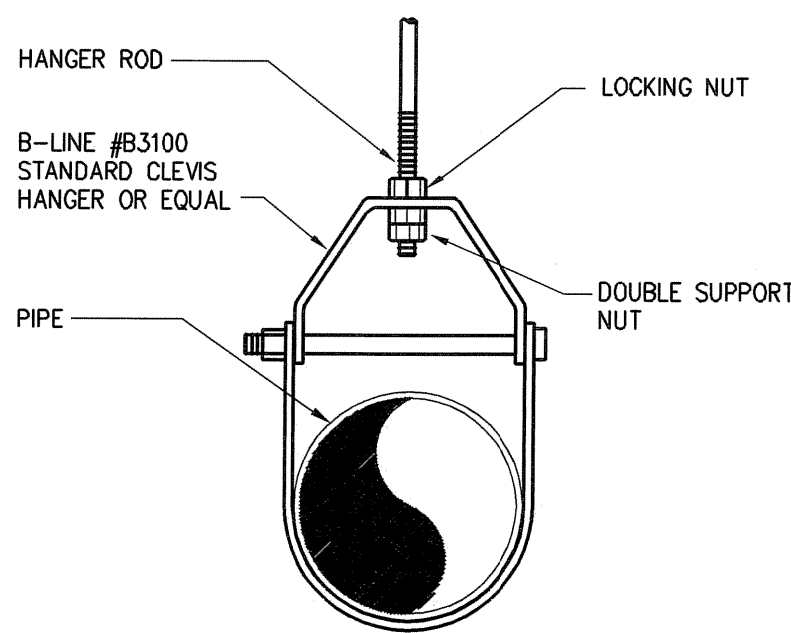
DAMPER SCHEDULE						
TAG	LOCATION	SIZE	VELOCITY	FREE AREA	PRESSURE DROP	REMARKS
LD-1	TEST STAND RM.	30"x30"	1091 FPM	2.39 SQ. FT.	0.18 IN. WC	PROVIDE WITH 120V AC ACTUATOR
LD-2	TEST STAND RM.	30"x30"	1091 FPM	2.39 SQ. FT.	0.18 IN. WC	PROVIDE WITH 120V AC ACTUATOR



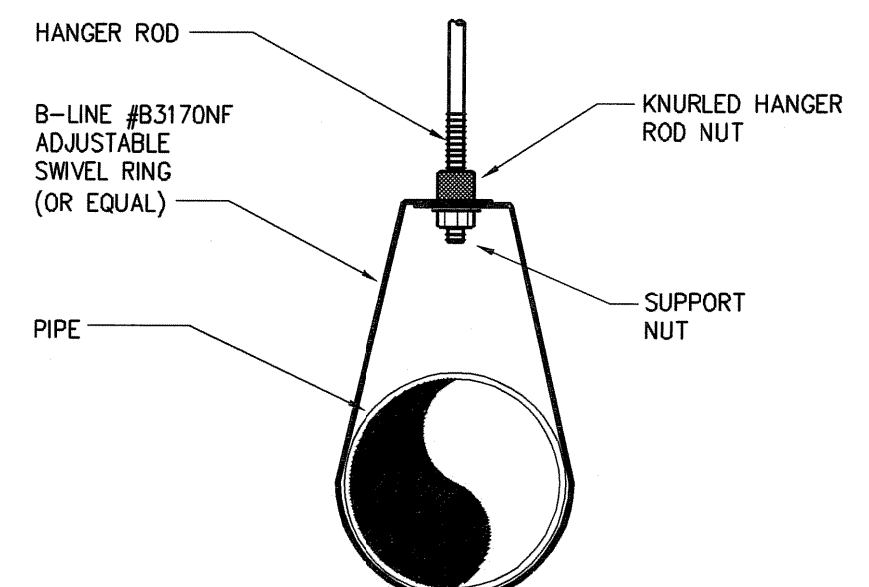
5 FOAM TANK PIPING SCHEMATIC
FP-103 SCALE: NOT TO SCALE

NOTES:

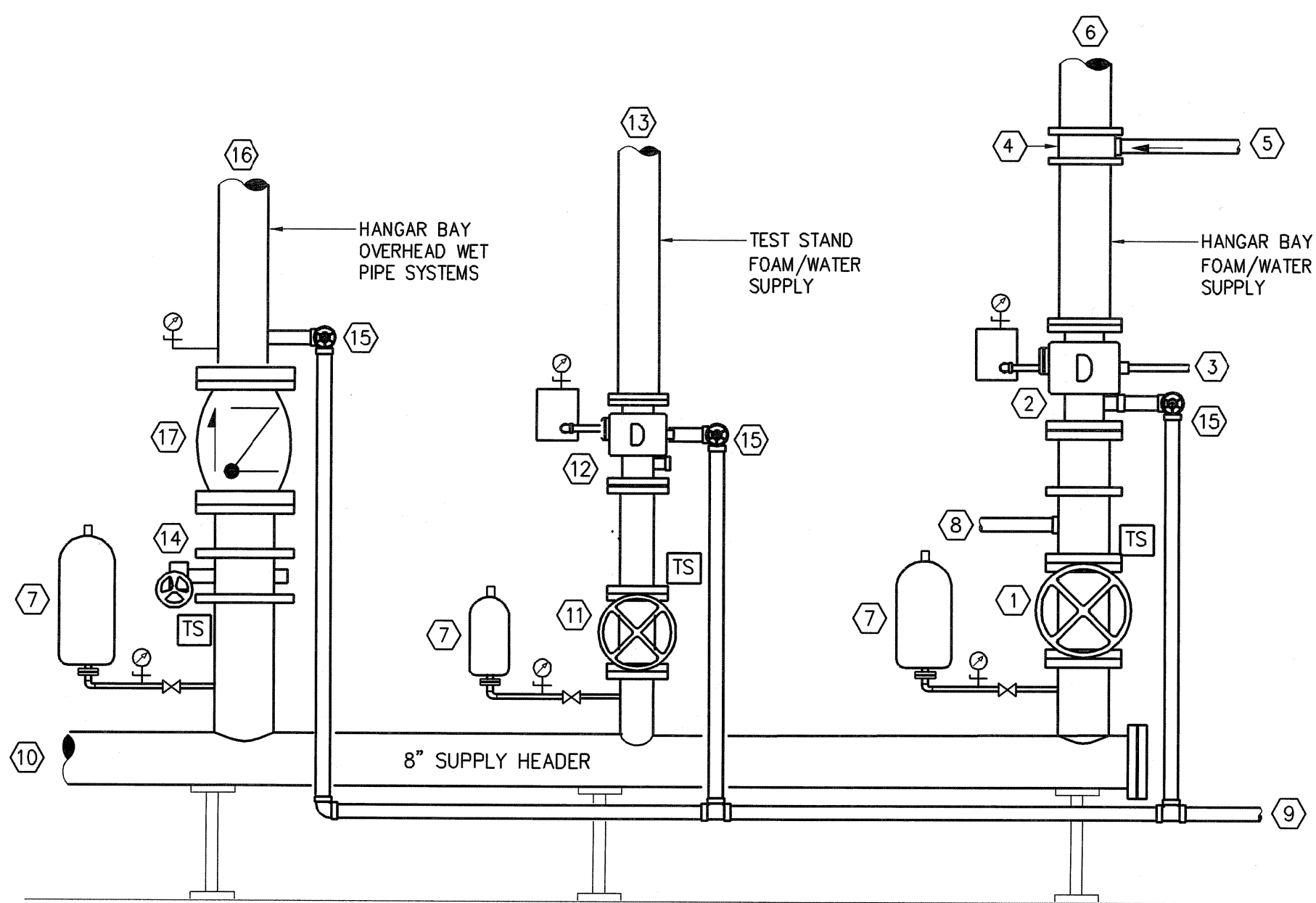
- ALL FOAM CONCENTRATE PIPING, FITTINGS AND VALVES SHALL BE STAINLESS STEEL WITH WELDED FITTINGS. NO EXCEPTIONS.
- FOAM CONCENTRATE TANKS SHALL BE PROVIDED WITH A SIGHT GLASS FOR VISUAL MONITORING OF FOAM CONCENTRATE LEVEL.



CLEVIS HANGER
NOT TO SCALE
NOTE: FOR PIPE SIZES 4" AND GREATER



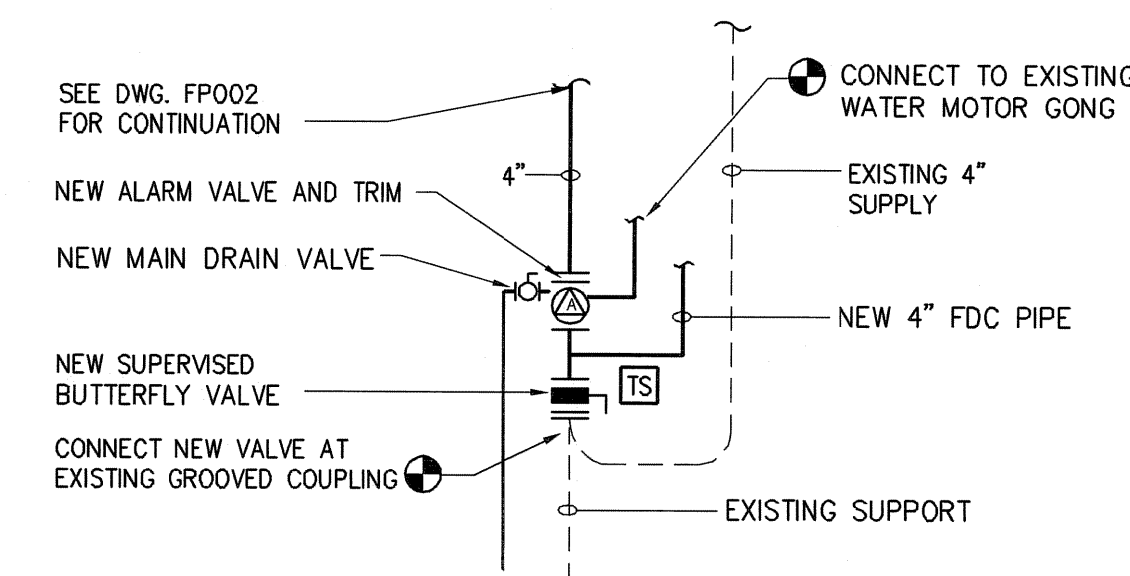
SWIVEL RING HANGER
NOT TO SCALE
NOTE: FOR PIPE SIZES 1" - 3"



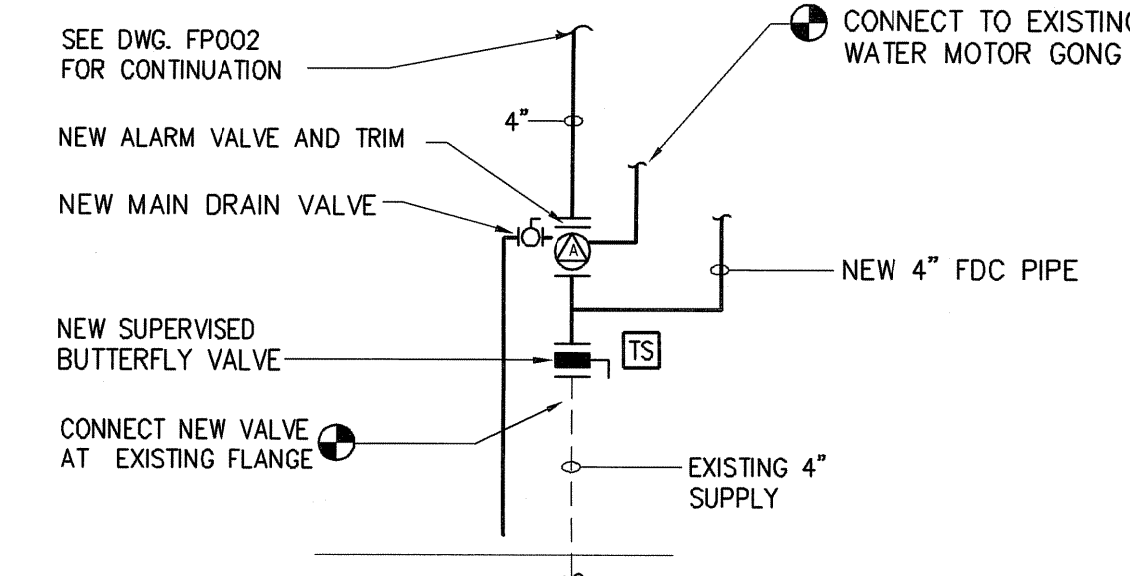
1 FOAM RISER DETAIL
FP-103 SCALE: NOT TO SCALE

CODED NOTES:

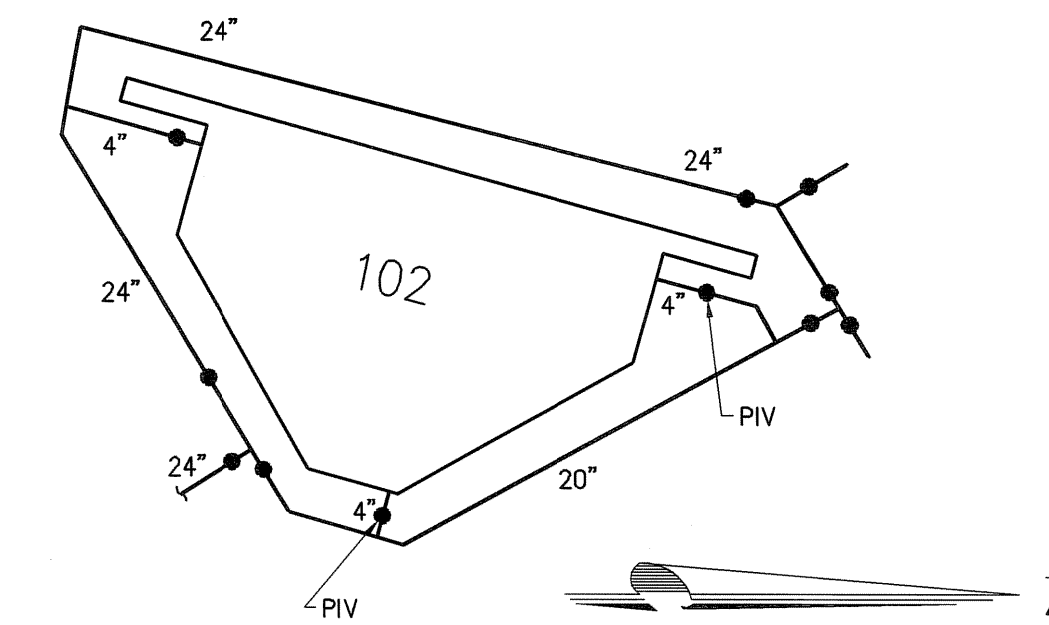
- 6" OS&Y GATE VALVE (SUPERVISED)
- 6" DELUGE VALVE
- PILOT PIPING TO HYDRAULIC ACTIVATED BALL VALVE
- 6" PROPORTIONER
- FOAM CONCENTRATE SUPPLY PIPING
- 6" FOAM/WATER SUPPLY TO GENERATORS
- SURGE ARRESTOR
- BLADDER PRESSURIZATION PIPING
- MAIN DRAIN (PIPE TO EXTERIOR OF BUILDING)
- SUPPLY HEADER - SEE DETAIL 2 FP103 FOR CONT.
- 2-1/2" SUPERVISED GATE VALVE
- 2-1/2" DELUGE VALVE
- 2-1/2" TO TEST STAND CONCENTRATE TANK
- 6" SUPERVISED BUTTERFLY VALVE
- 2" DRAIN VALVE
- 6" SUPPLY TO WET PIPE SYSTEM
- 6" CHECK VALVE



4 WET PIPE RISER DETAIL
FP-102 SCALE: NOT TO SCALE



6 WET PIPE RISER DETAIL
FP-102 SCALE: NOT TO SCALE



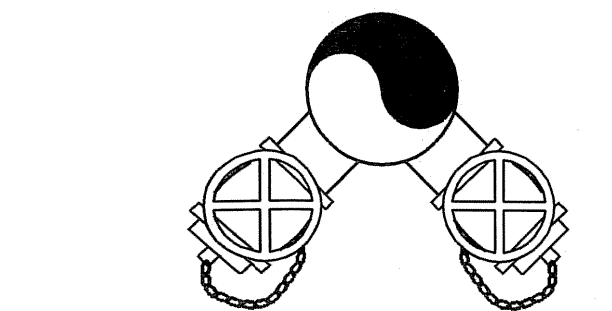
PARTIAL SITE PLAN

SCALE: 1" = 100'-0"
NOTE: FIRE PUMPS ARE LOCATED IN BUILDING 108 LOCATED ON THE SOUTHEAST CORNER OF THE BASE.

NOTES:

- ALL FIRE PROTECTION SYSTEM MODIFICATIONS SHALL BE PERFORMED IN ACCORDANCE WITH AIR NATIONAL GUARD ETL 01-1, AIR FORCE ETL 02-15, NFPA 409, NFPA 13 AND NFPA 11A.
- THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO SHOW EVERY FITTING, OFFSET, ETC. CONTRACTOR IS RESPONSIBLE FOR COMPLETE CODE COMPLIANT SYSTEMS.
- CONTRACTOR SHALL COORDINATE ALL WORK WITH BUILDING STRUCTURE AND EXISTING EQUIPMENT AND UTILITIES.
- CONTRACTOR SHALL CONDUCT A NEW HYDRANT FLOW TEST TO VERIFY WATER DATA. CONTRACTOR SHALL SUBMIT HYDRAULIC CALCULATIONS FOR THE NEW HIGH EXPANSION FOAM SYSTEM AND SUBMIT CALCULATIONS FOR THE RENOVATED OVERHEAD WET PIPE SPRINKLER SYSTEM TO VERIFY SYSTEM PERFORMANCE.
- PIPING SHALL BE SUPPORTED AND SEISMICALLY BRACED PER NFPA 13.
- PROVIDE SLEEVES ON ALL PIPING PENETRATIONS THROUGH WALLS AND FLOORS. SPACE BETWEEN PIPE AND SLEEVE SHALL BE SEALED TO A FIRE RATED CONDITION EQUAL TO OR GREATER THAN THE WALL/FLOOR THAT THE PIPING IS PENETRATING.
- ALL CONTRACTORS BIDDING WORK UNDER THIS CONTRACT ARE REQUIRED TO ATTEND A PRE-BID WALK THROUGH OF THE FACILITY.
- ALL EQUIPMENT FOR THE HIGH EXPANSION FOAM SYSTEM SHALL BE OF THE SAME MANUFACTURER.
- A FULL FLOW FOAM TEST SHALL BE CONDUCTED PER NFPA 409 AND ETL 01-1 TO VERIFY SYSTEM PERFORMANCE. CONTRACTOR IS TO PROTECT ALL HANGAR EQUIPMENT, SYSTEMS, SURFACES, ETC. THAT MAY BE AFFECTED BY THE TEST. CONTRACTOR SHALL SUPPLY ENOUGH EXTRA FOAM TO CONDUCT TEST AND SHALL REPLENISH CONCENTRATE SUPPLY IMMEDIATELY UPON COMPLETION OF THE TEST. CONTRACTOR SHALL COMPLETELY CLEAN FROM ALL SURFACES ANY FOAM/WATER RESIDUE LEFT FROM TEST. TRENCH DRAINS ARE TO BE FLUSHED TO REMOVE ALL RESIDUE. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY THE TEST AT NO ADDITIONAL COST TO THE CONTRACTING OFFICER.

3 FOAM TEST HEADER
FP-101 SCALE: NOT TO SCALE



FOAM TEST HEADER PLAN VIEW
SCALE: NOT TO SCALE

DESIGN CRITERIA	
WET PIPE SPRINKLER SYSTEM:	.20GPM PER SQ. FT. OVER MOST REMOTE 5000 SQ. FT.
HIGH EXPANSION FOAM SYSTEM:	MINIMUM APPLICATION RATE- 2.6 CU. FT. PER MINUTE PER SQ. FT. COVERAGE OF 90% OF THE AIRCRAFT SILHOUETTE SHALL BE ACHIEVED IN ONE MINUTE OR LESS. AIRCRAFT SERVICE AREA SHALL BE COVERED TO A DEPTH OF 3.2 FT. IN 4 MINUTES OR LESS.

LEGEND:

- PIPE ELBOW UP
- PIPE ELBOW DN
- PIPE TEE DN
- PIPE TEE UP
- EXISTING SPRINKLER PIPING TO REMAIN
- F/W- NEW HIGH EXPANSION FOAM/WATER SOLUTION PIPING
- EXISTING PIPING/EQUIPMENT TO BE REMOVED
- EXISTING PIPING TO BE REMOVED
- PIPE RISER UP/DN
- UPRIGHT SPRINKLER HEAD TO BE REPLACED
- STRAINER
- GATE VALVE
- CHECK VALVE
- BALL VALVE
- REDUCER/INCREASER
- CONNECT NEW TO EXISTING
- TAMPER SWITCH

ABBREVIATIONS:

- AFFF AQUEOUS FILM FORMING FOAM
- AFF ABOVE FINISHED FLOOR
- OH OVERHEAD
- FDC FIRE DEPARTMENT CONNECTION
- RPZ REDUCED PRESSURE ZONE
- DN DOWN
- OS&Y OUTSIDE STEM AND YOKE
- F/W FOAM WATER
- NTS NOT TO SCALE
- DWG DRAWING
- SQ SQUARE
- FT FEET
- CONT CONTINUATION
- BOP BOTTOM OF PIPE
- MEZZ MEZZANINE

Submitted/Revision	By	Date
1	GC	03/15/07

Submitted/Revision	By	Date
1	GC	03/15/07

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1	GC	03/15/07

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1	GC	03/15/07

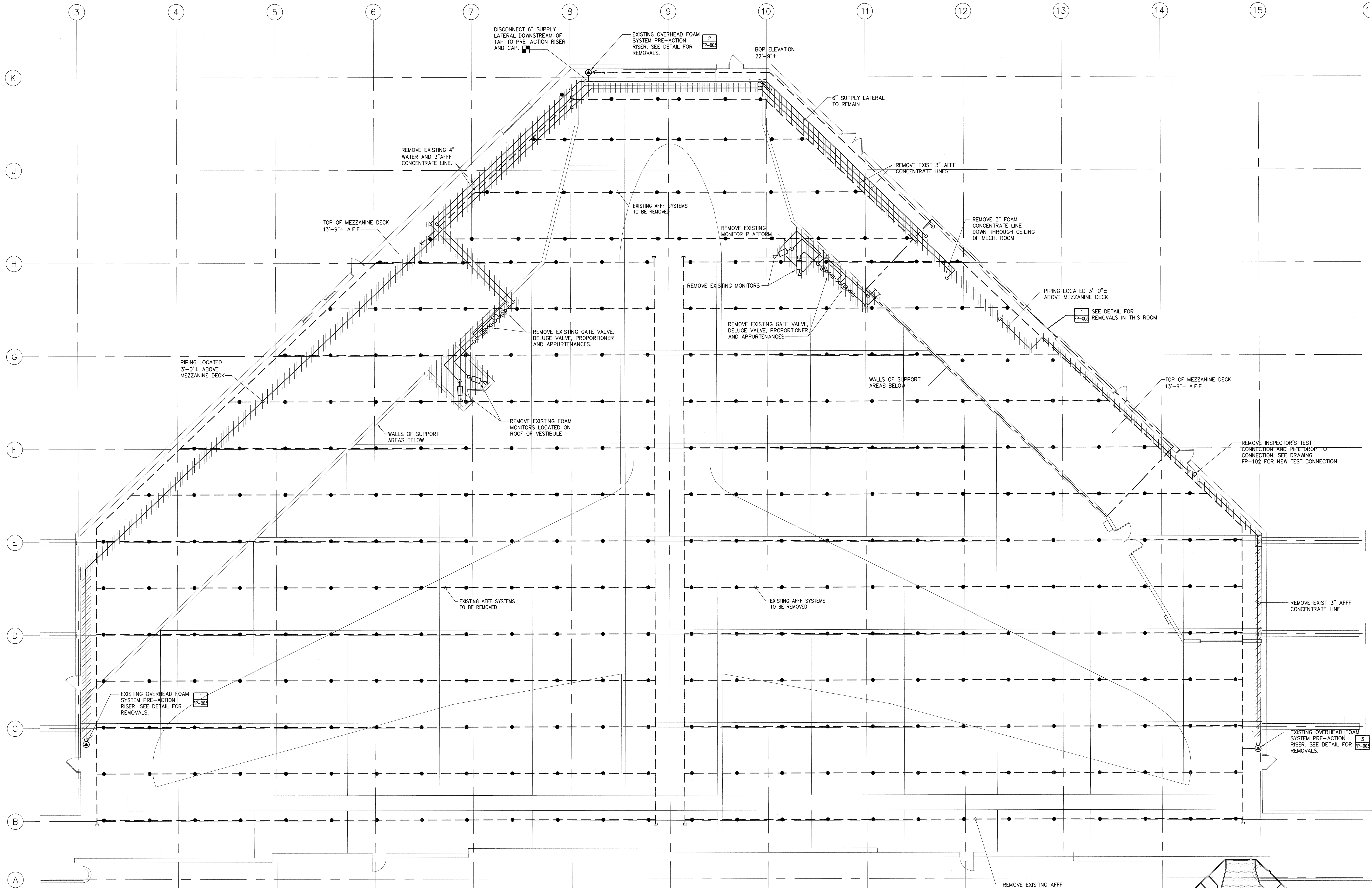
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1	GC	03/15/07

Submitted/Revision	By	Date
1	GC	03/15/07

Submitted/Revision	By	Date
1	GC	03/15/07

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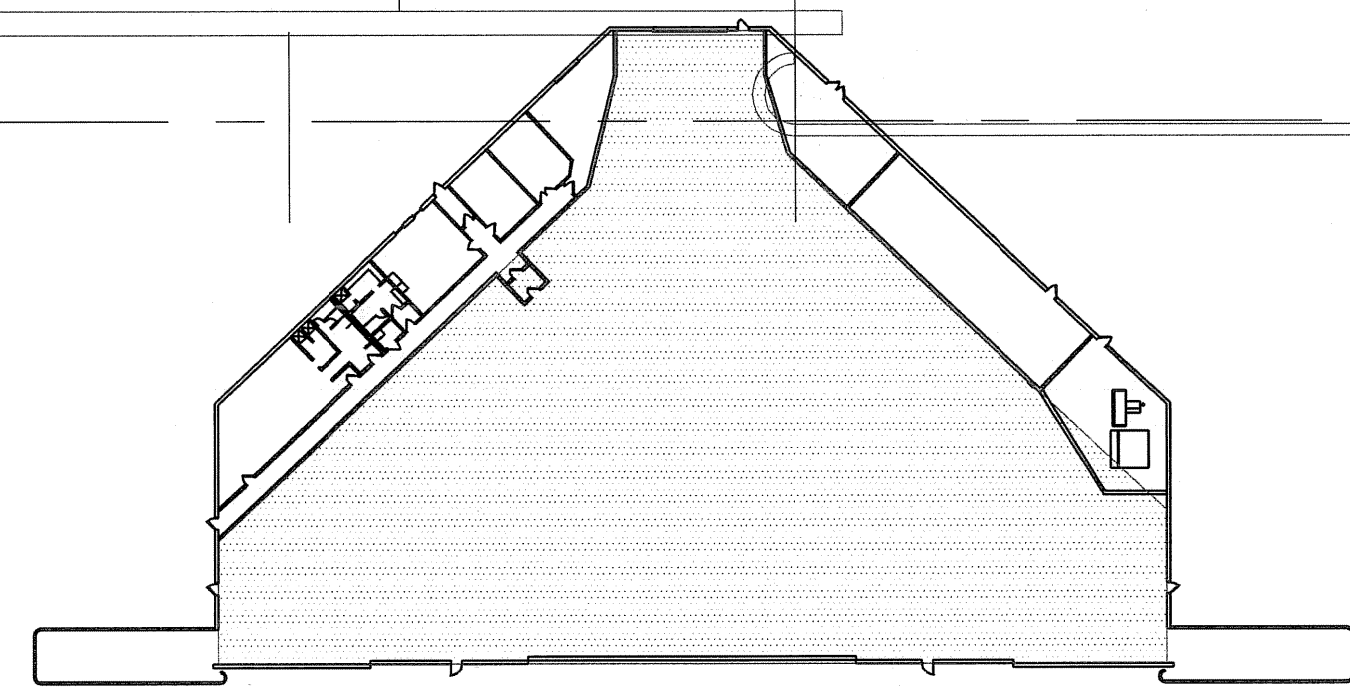
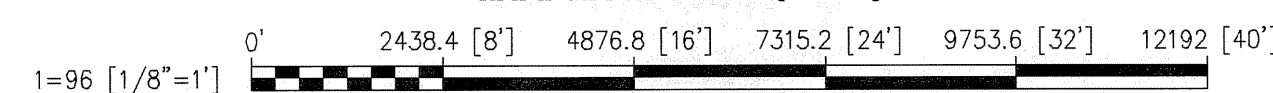
DEMOLITION SCOPE OF WORK:

- EXISTING OVERHEAD AFF SYSTEMS SHALL BE REMOVED. REMOVALS SHALL INCLUDE ALL PIPING, FITTINGS, HEADS, HANGARS AND ATTACHED APPURTENANCES.
- EXISTING FOAM MONITORS, MONITOR RISERS, SUPPLY PIPING, AND SUPPORT STANDS SHALL BE REMOVED.
- EXISTING OVERHEAD AFF SYSTEM RISERS SHALL BE CONVERTED TO WATER BASED PRE-ACTION RISERS. SEE PLANS FOR LIMITS OF REMOVALS.
- EXISTING AFF HOSE REELS AND ASSOCIATED PIPING, FITTINGS, VALVES AND APPURTENANCES SHALL BE REMOVED.

HANGAR DEMOLITION PLAN
SCALE: 1" = 96' [1/8" = 1'-0"]

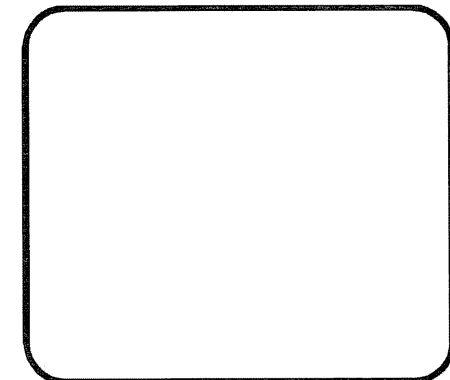


GRAPHIC SCALE (FEET)



KEY PLAN

App'd	By	Date
GC	DDL	03/15/07
FIRE PROTECTION SYSTEM MODIFICATIONS		
SUBMITTAL / Revision		
No.		

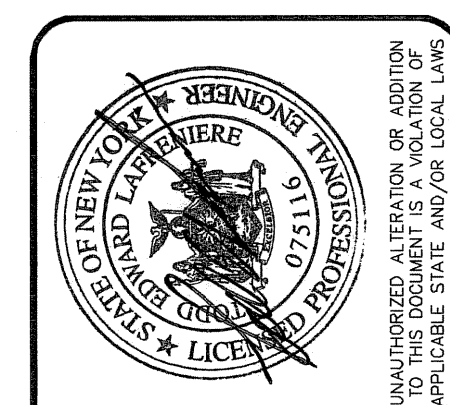


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INTERIOR DESIGN
REHABILITATION

SRG PROJECT NO. 0040.01-0015



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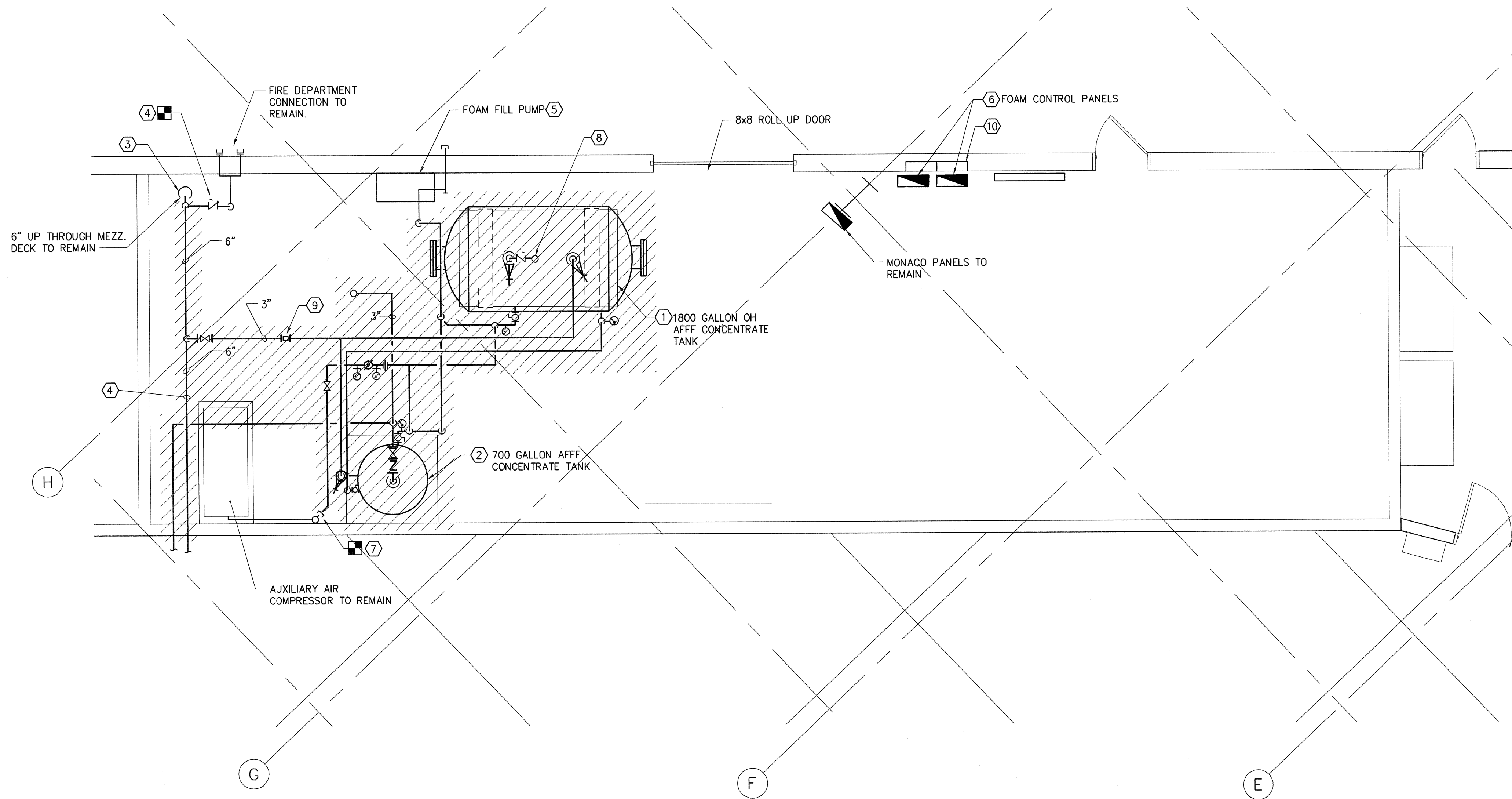
DESIGNED: DMW / DRAWN: P.L. / CHECKED: TEL

REPAIR FUEL CELL HANGAR BUILDING 102
STEWART AIR NATIONAL GUARD
NEWBURGH, NY

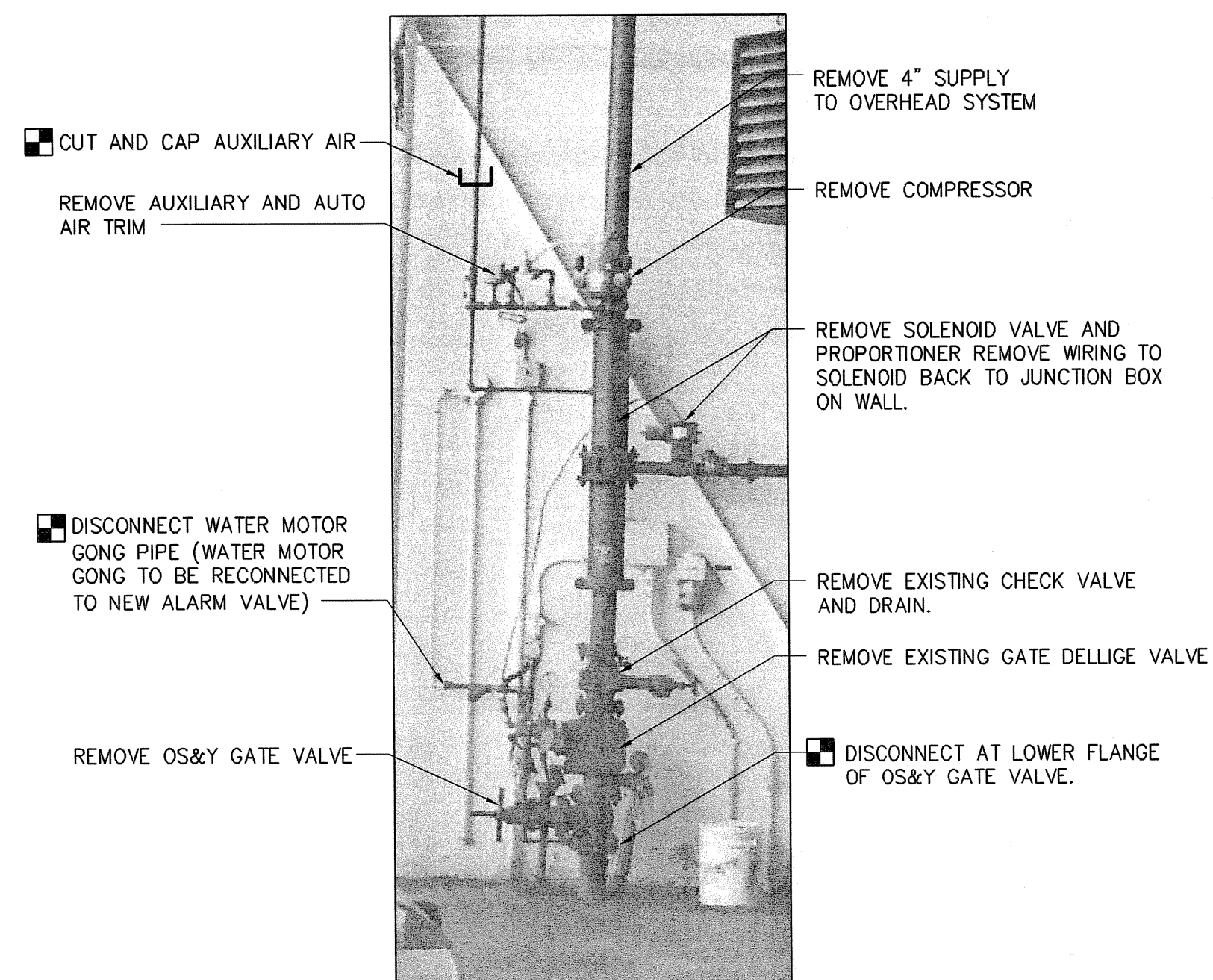
FIRE PROTECTION DEMOLITION PLAN

Issue Date: 7/2/06 / Project No.: 12727 / Scale: AS NOTED

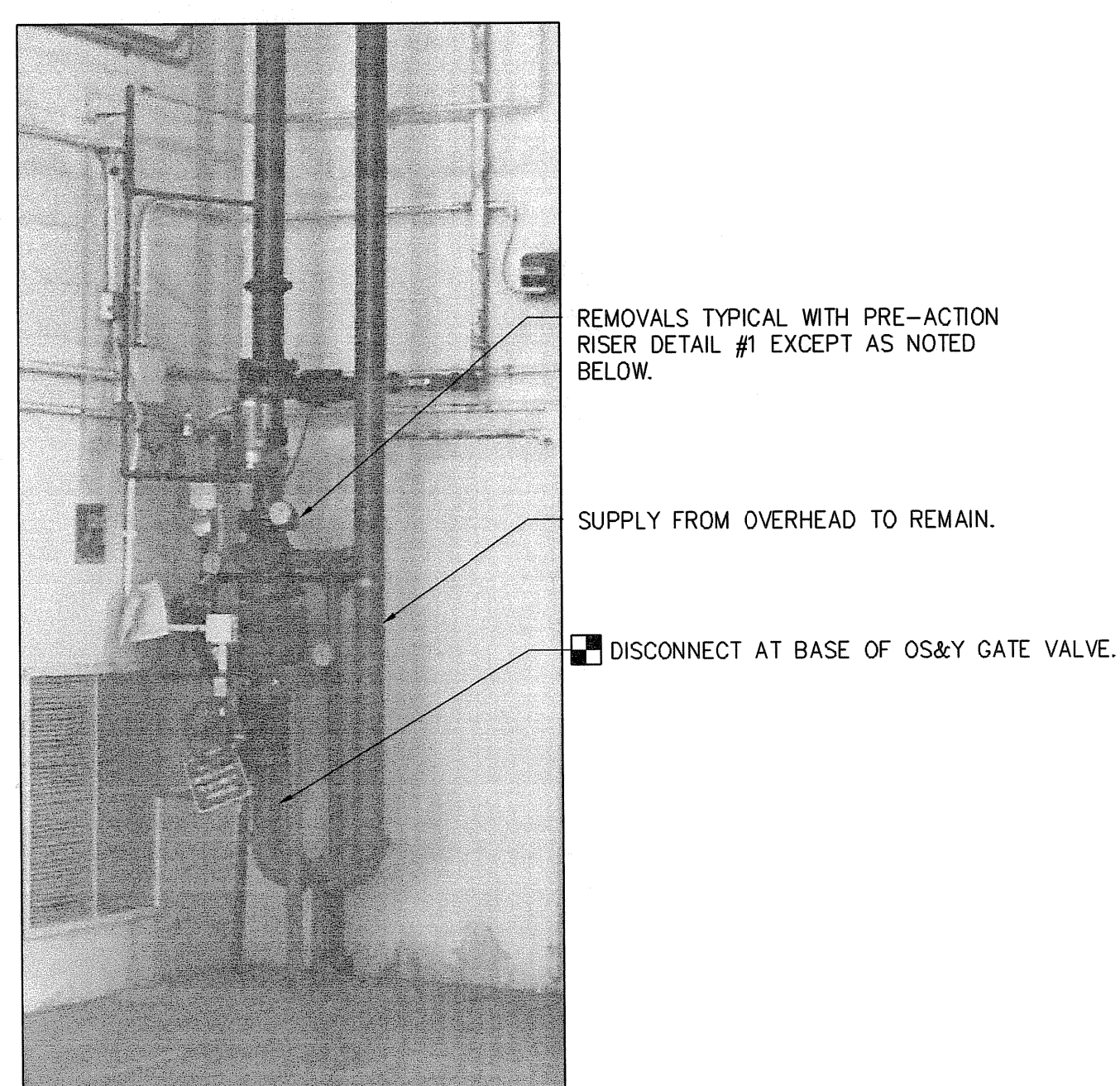
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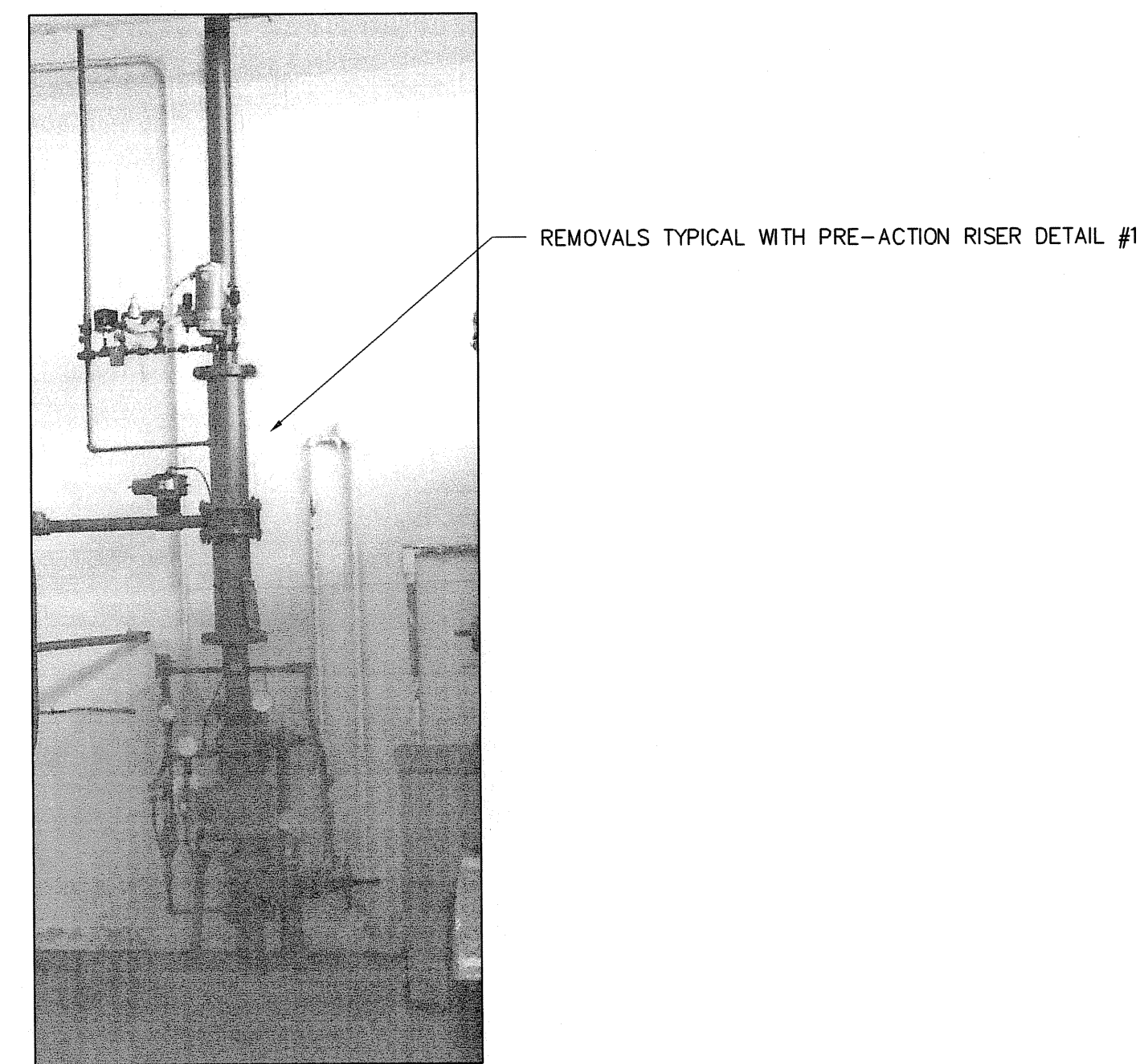
HIGH EXPANSION FOAM PLAN
SCALE: 1" = 48' [1/4" = 1'-0"]



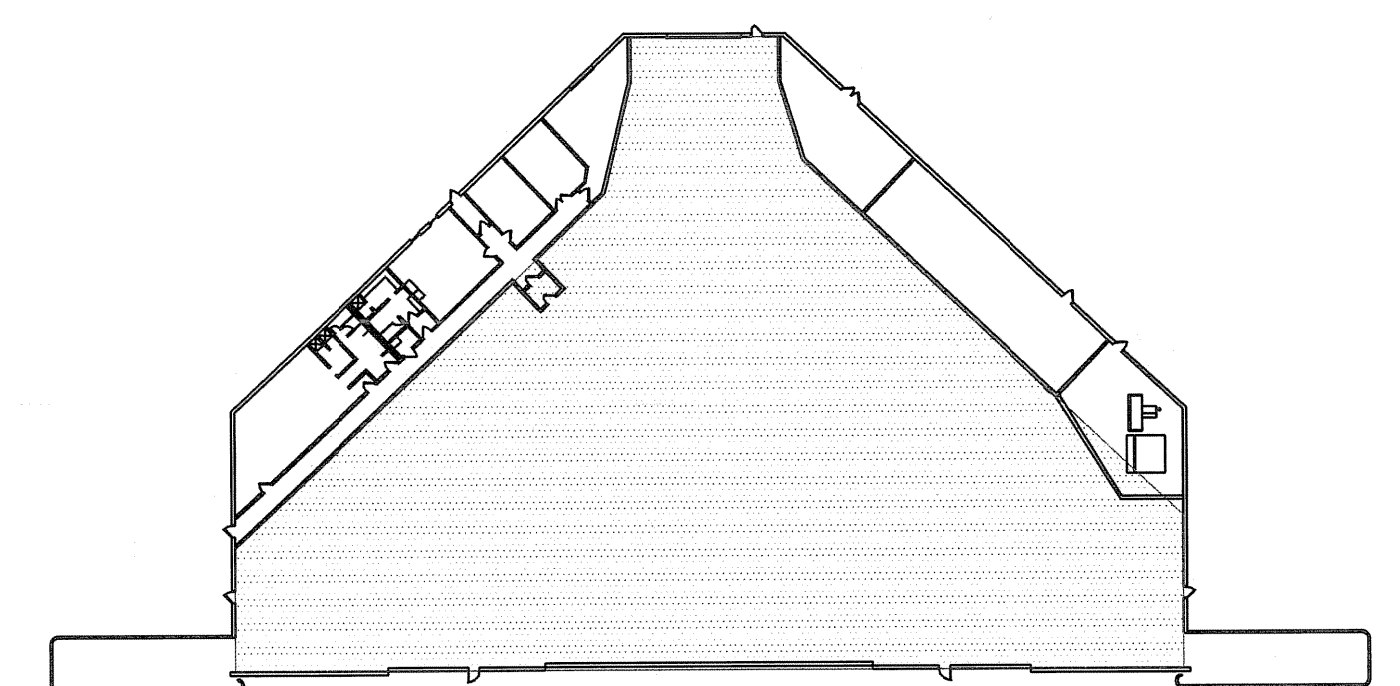
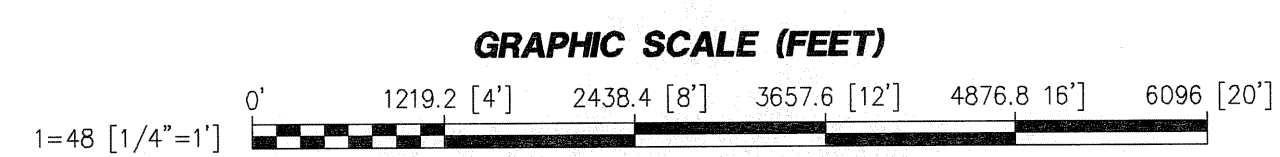
1 PRE-ACTION RISER DETAIL
SCALE: NO SCALE



2 PRE-ACTION RISER DETAIL
SCALE: NO SCALE



3 PRE-ACTION RISER DETAIL
SCALE: NO SCALE



KEY PLAN

DEMOLITION REMOVAL NOTES:

- CONTRACTOR SHALL REMOVE ALL EXISTING AFFF FOAM SYSTEM TANKS, PIPING, FITTINGS, VALVES AND APPURTENANCES IN M & E FOAM/MECHANICAL ROOM EXCEPT AS NOTED.
- TANKS ARE TO BE MOVED IN ONE PIECE THROUGH OVERHEAD DOOR. CONTRACTOR SHALL MINIMIZE ANY CUTTING IN THE FOAM ROOM ALL CUTTING MUST BE COORDINATED AND APPROVED WITH BASE CONTRACTING OFFICER.
- CONTRACTOR SHALL PROPERLY DISPOSE OF ALL REMOVED MATERIALS. DEMOLITION MATERIALS SHALL BE REMOVED FROM BASE AS THEY ARE REMOVED FROM SERVICE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER DISPOSAL OF REMOVED AFFF FOAM CONCENTRATE.
- ALL DECK/WALL PENETRATIONS RESULTING FROM REMOVALS THAT ARE NOT RE-USED SHALL BE SEALED TO A FIRE RATED CONDITION EQUAL OR GREATER THAN SURROUNDING WALL/DECK.

DEMOLITION KEY NOTES:

- REMOVE EXISTING 1800 GALLON AFFF TANK
- REMOVE EXISTING 700 GALLON AFFF TANK
- REMOVE EXISTING 8" SUPPLY RISER DOWN TO OS&Y GATE VALVE LOCATED 13" ABOVE FINISHED FLOOR, OS&Y GATE VALVE IS TO REMAIN. 8" CHECK VALVE IN RISER IS TO BE REMOVED.
- DISCONNECT 6" FIRE DEPARTMENT CONNECTION PIPE AT CHECK VALVE. FIRE DEPARTMENT CONNECTION AND CHECK VALVE ARE TO REMAIN FOR RE-USE.
- REMOVE FOAM FILL PUMP AND PIPING. PATCH HOLE IN EXTERIOR WALL LEFT FROM REMOVAL OF FILL CONNECTION.
- REMOVE AFFF FOAM CONTROL PANELS.
- REMOVE COMPRESSED AIR SUPPLY PIPING BACK TO 3/4" RISER. AND CAP AT RISER. 3/4" RISER IS TO REMAIN IN SERVICE OUT INTO HANGAR BAY.
- 3" UP THROUGH CEILING TO UNDERWING FOAM SYSTEMS TO BE REMOVED
- REMOVE PRESSURE SENSOR AND WIRING. WIRING SHALL BE REMOVED BACK TO JUNCTION BOX LOCATED ON CEILING ABOVE.
- REMOVE EXISTING BATTERIES.

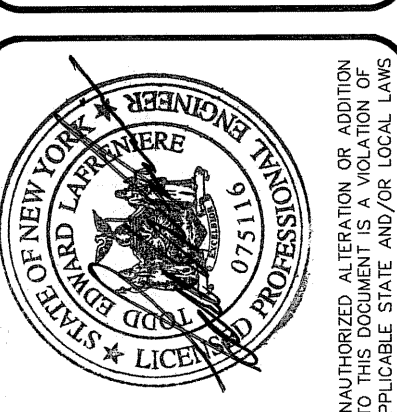
No.	Revised	By	Date
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INTERIOR DESIGN
REHABILITATION

SRG PROJECT NO. 0040-01-0015



Design: Coughlin & Associates LLP
CLOUGH HARBOUR & ASSOCIATES LLP
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www.coughlin.com

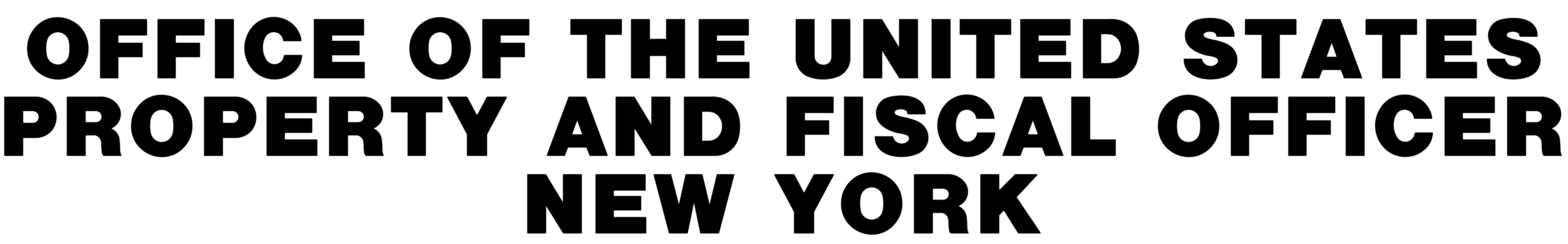
CHA

Designed: DMV Drawn: P.J. Checked: TEL

REPAIR FUEL CELL HANGAR: BUILDING 102
STEWART AIR NATIONAL GUARD
NEWBURGH, NY

FOAM ROOM PARTIAL
PLAN AND DETAILS

Project No.: 12727
Issue Date: 7/21/08
Scale: AS NOTED



RECONFIGURE MAINTENANCE COMPLEX FOR C17

PROJECT NO. WHAY112001

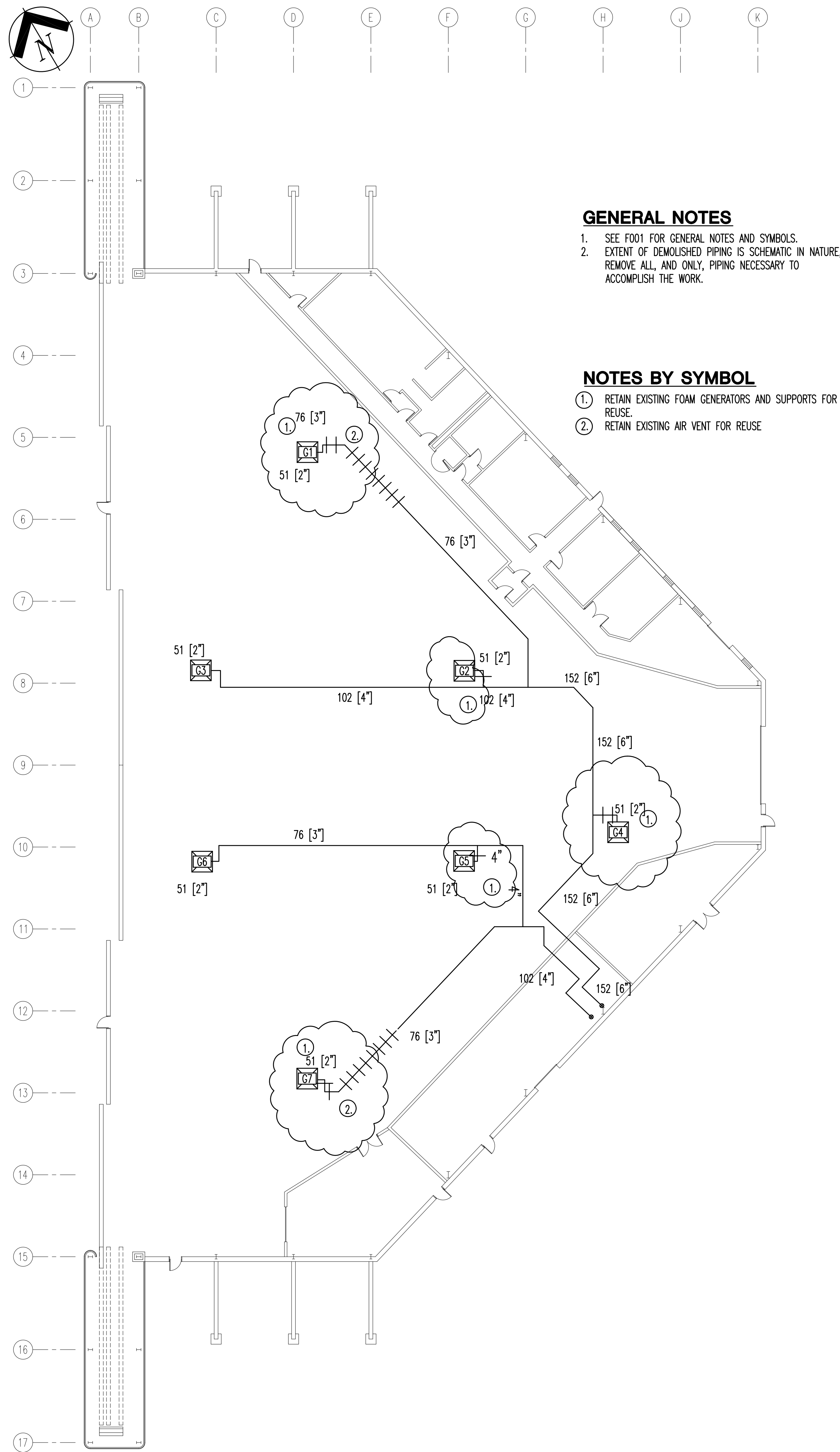


NOT TO SCALE



NOT TO SCALE

				<div><div>Hatch Mott MacDonald</div><div>540 WASHINGTON BLVD., SUITE 2000, PLEASANTON, CA 94566</div></div>	RECONFIGURE MAINTENANCE COMPLEX FOR C17 PROJECT WHAY112001 105TH AIRLIFT WING - NEW YORK AIR NATIONAL GUARD STEWART AIRPORTNEWBURGH, NEW YORK			
					Drawing Title: TITLE SHEET			
					<div><div><div>NATIONAL GUARD BUREAU</div><div>DEPARTMENTS OF THE ARMY AND THE AIR FORCE</div><div>WASHINGTON, D.C.</div></div></div>	Designed By: -	Drawn By: CMK	Sheet Reference Number T001
						Checked By: RKF	Date: 4/6/12	
						In Charge: KC	Scale: AS SHOWN	
Revision	Description	Date	Approved					



GENERAL NOTES

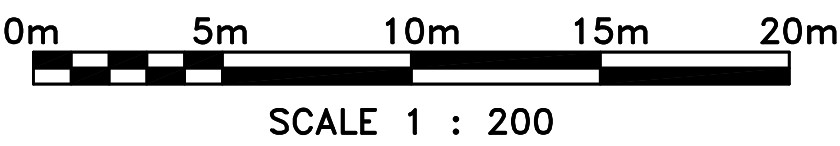
1. SEE F001 FOR GENERAL NOTES AND SYMBOLS.
2. EXTENT OF DEMOLISHED PIPING IS SCHEMATIC IN NATURE, REMOVE ALL, AND ONLY, PIPING NECESSARY TO ACCOMPLISH THE WORK.

NOTES BY SYMBOL

① RETAIN EXISTING FOAM GENERATORS AND SUPPORTS FOR REUSE.
② RETAIN EXISTING AIR VENT FOR REUSE

FIRE SUPPRESSION DEMOLITION PLAN
BUILDING 102
SCALE: 1 : 200

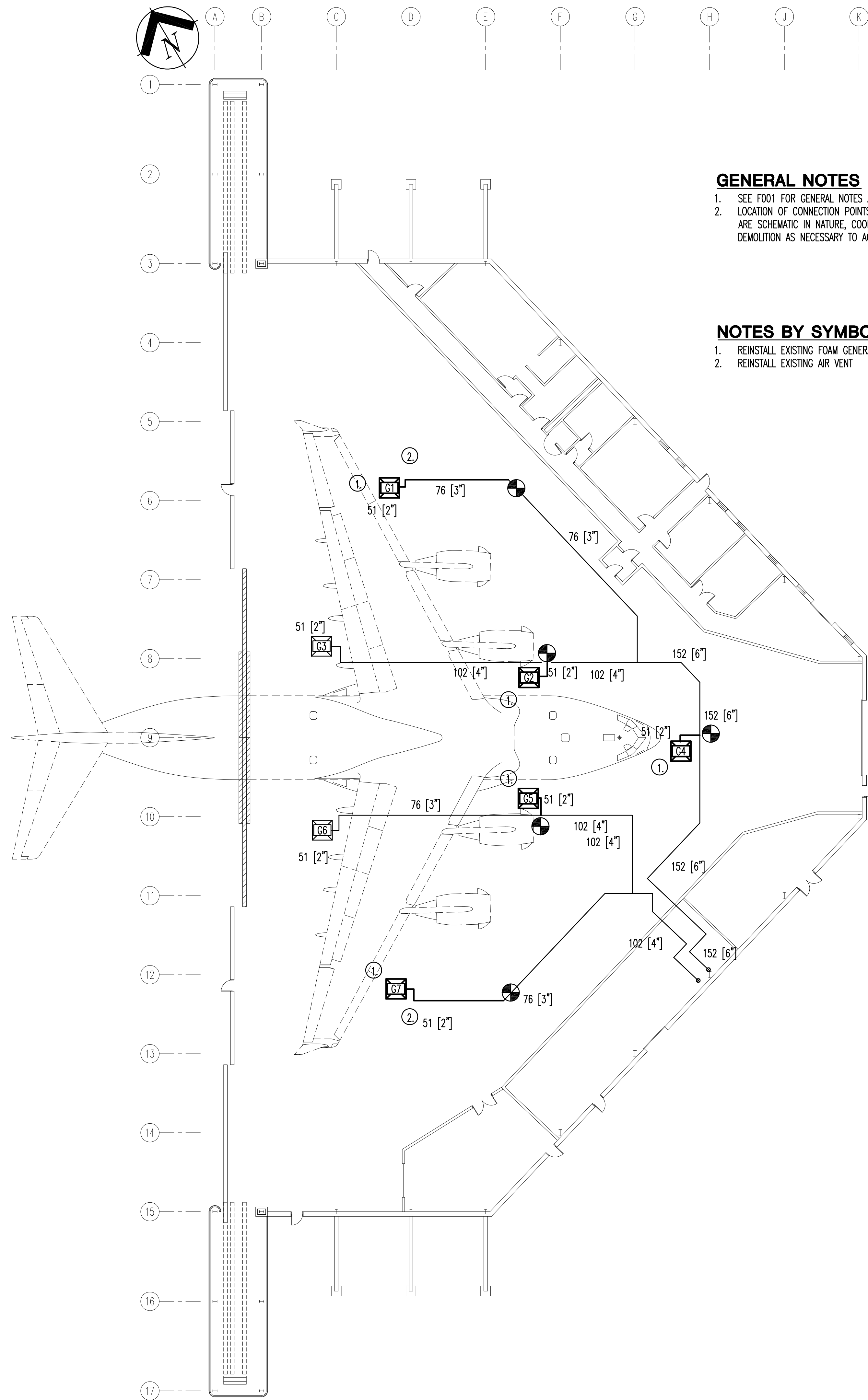
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RECONFIGURE MAINTENANCE COMPLEX FOR C17 PROJECT WHAY112001 105TH AIRLIFT WING - NEW YORK AIR NATIONAL GUARD STEWART AIRPORTNEWBURGH, NEW YORK			
Drawing Title: BUILDING 102 FIRE SUPPRESSION DEMOLITION PLAN			
DEPARTMENTS OF THE ARMY AND THE AIR FORCE WASHINGTON D.C.	Designed By: PRS	Drawn By: PRS	Sheet Reference Number F300
	Checked By: PRS	Date: 4/6/12	
	In Charge: KC	Scale: AS SHOWN	Sheet <u>59</u> of <u>61</u>



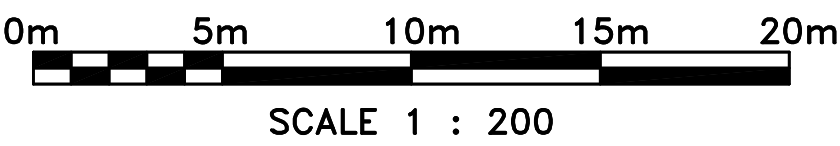
GENERAL NOTES

1. SEE F001 FOR GENERAL NOTES AND SYMBOLS.
2. LOCATION OF CONNECTION POINTS TO EXISTING SYSTEM ARE SCHEMATIC IN NATURE. COORDINATE ALL PIPING WITH DEMOLITION AS NECESSARY TO ACCOMPLISH THE WORK.

NOTES BY SYMBOL

1. REINSTALL EXISTING FOAM GENERATOR
2. REINSTALL EXISTING AIR VENT


FIRE SUPPRESSION PLAN
SCALE: 1 : 200
BUILDING 102

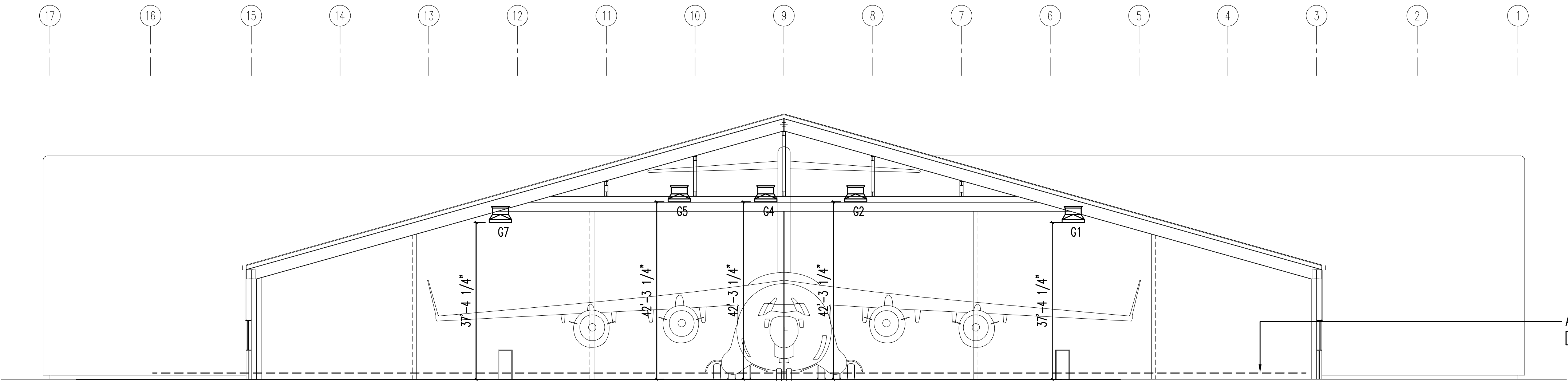


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Revision	Description	Date	Approved

Hatch Mott MacDonald
3455 WASHINGTON BLVD. SUITE 2000, ARLING CLIFF, ILLINOIS 60016-3710

RECONFIGURE MAINTENANCE COMPLEX FOR C17 PROJECT WHAY112001 105TH AIRLIFT WING - NEW YORK AIR NATIONAL GUARD STEWART AIRPORTNEWBURGH, NEW YORK			
Drawing Title: BUILDING 102 FIRE SUPPRESSION PLAN			
 National Guard Bureau DEPARTMENTS OF THE ARMY AND THE AIR FORCE WASHINGTON D.C.	Designed By: PRS	Drawn By: PRS	Sheet Reference Number F301
	Checked By: PRS	Date: 4/6/12	
	In Charge: KC	Scale: AS SHOWN	Sheet <u>60</u> of <u>61</u>



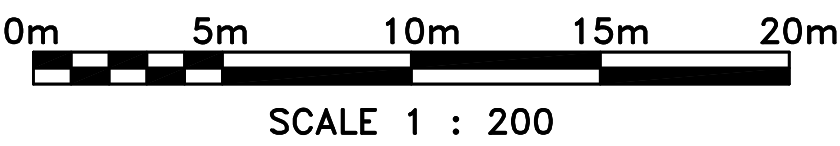
ALL AREAS ARE CLASSIFIED AS CLASS I, DIVISION II UP TO 457
[18'] ABOVE HANGAR FLOOR

GENERAL NOTES

1. SEE F001 FOR GENERAL NOTES AND SYMBOLS.
2. VERIFY ELEVATIONS OF FOAM GENERATORS IN FIELD.
INTENT IS THAT BOTTOM OF GENERATOR BE AT THE
PROJECTED LOWER EDGE OF TRUSS.

FIRE SUPPRESSION SECTION
BUILDING 102

SCALE: 1 : 200

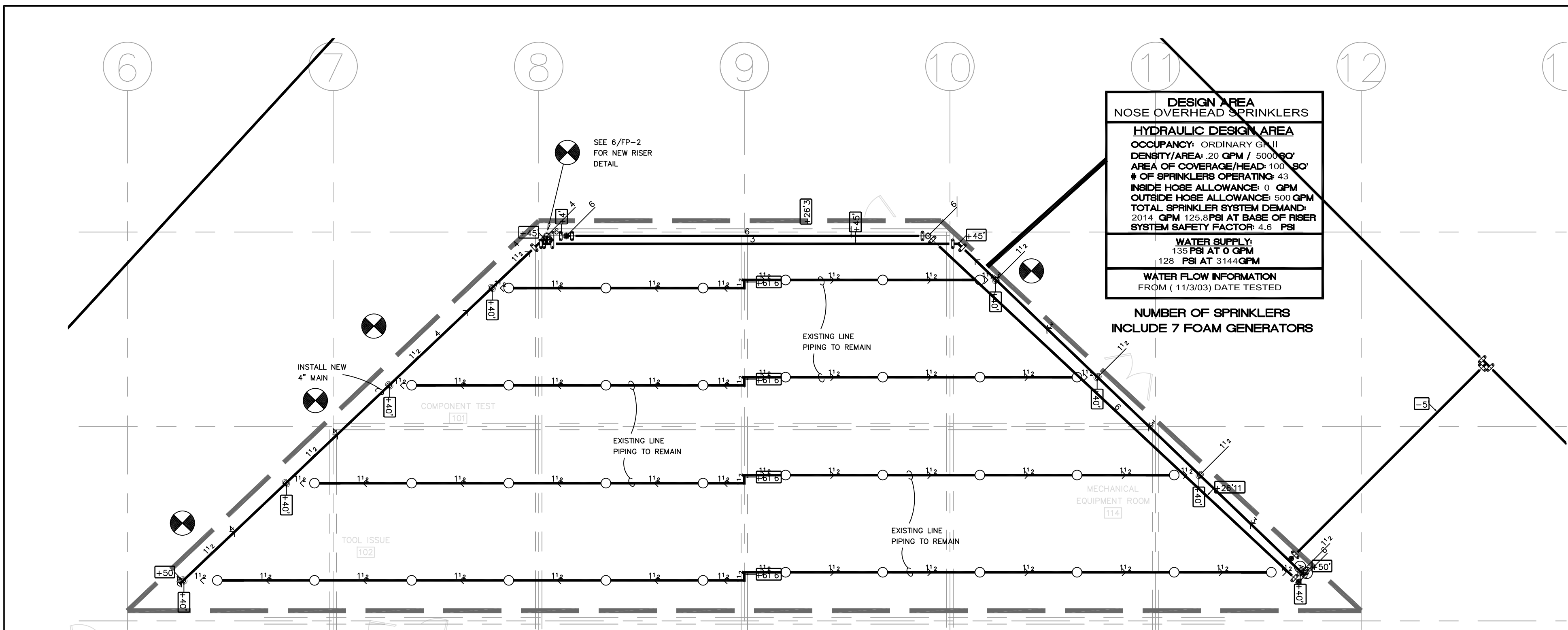


ALL ELEVATIONS AND DIMENSIONS ARE IN MILLIMETERS AND
ARE APPROXIMATE. IMPERIAL UNITS ARE SHOWN IN BRACKETS.

		KIN CHOW LIC. No. 061219-1	
Revision	Description	Date	Approved



RECONFIGURE MAINTENANCE COMPLEX FOR C17 PROJECT WHAY112001 105TH AIRLIFT WING - NEW YORK AIR NATIONAL GUARD STEWART AIRPORTNEWBURGH, NEW YORK			
Drawing Title: BUILDING 102 FIRE SUPPRESSION SECTION			
Designed By: PRS	Drawn By: PRS	Sheet Reference Number F302	
Checked By: PRS	Date: 4/6/12		
In Charge: KC	Scale: AS SHOWN	Sheet <u>61</u> of <u>61</u>	



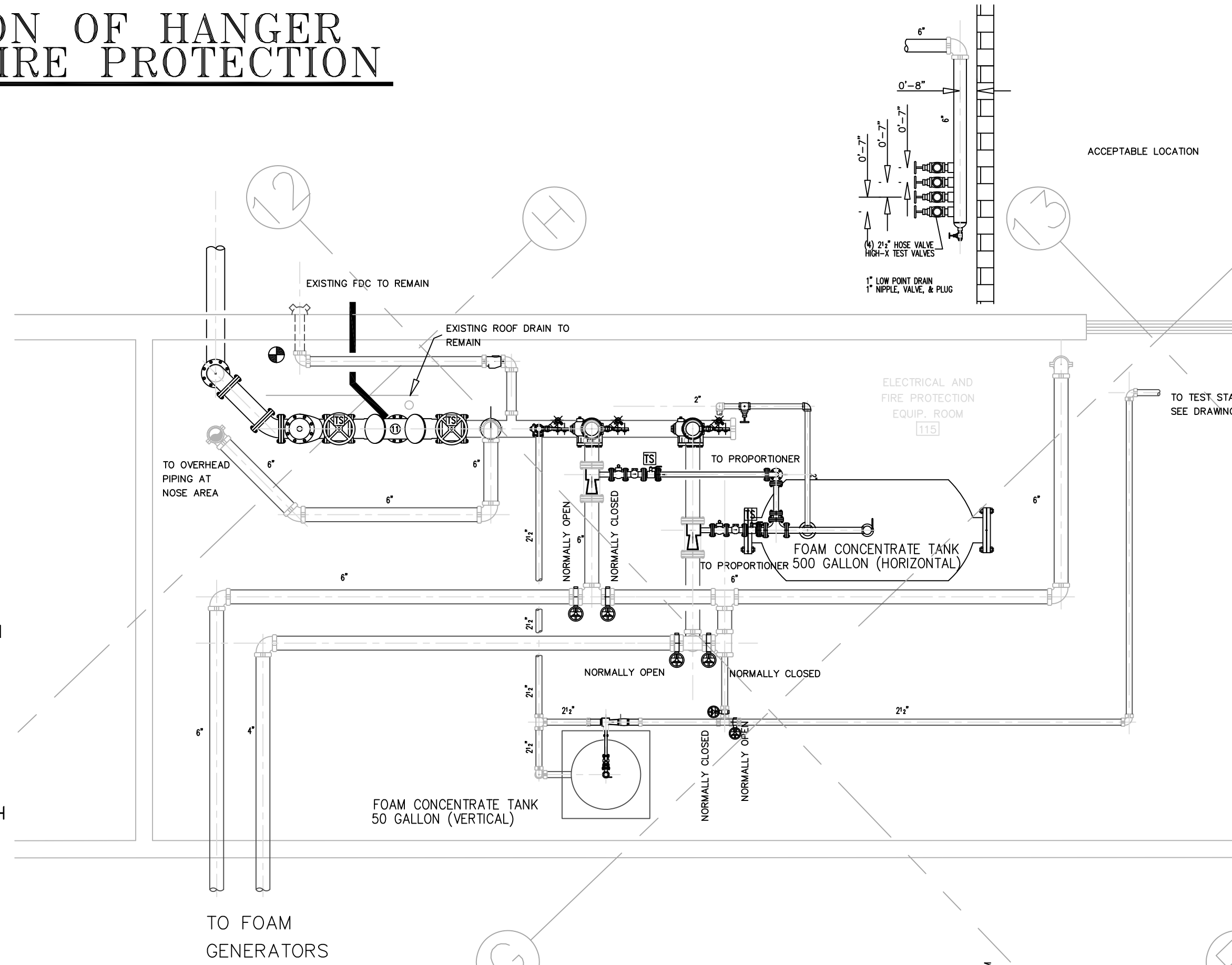
1 NOSE SECTION OF HANGER OVERHEAD FIRE PROTECTION
FP-3 SCALE: 1/8" = 1'-0"

GENERAL SPRINKLER SYSTEM NOTES:

- ALL WORK TO BE IN ACCORDANCE WITH NFPA 13, AIR NATIONAL GUARD DESIGN POLICY, AIR FORCE ETL & ALL OTHER AUTHORITIES HAVING JURISDICTION.
- ALL SPRINKLER & HIGH EXPANSION FOAM PIPING IS SCHEDULE 40 BLACK STEEL JOINED WITH WELDED OUTLET FITTINGS (GROOVED/THREADED) AND GROOVED END MECHANICAL TYPE FITTINGS AND COUPLINGS.
- ALL SPRINKLER PIPING AND HIGH EXPANSION FOAM BRANCHLINES ARE SCHEDULE 40 BLACK STEEL PIPE WITH THREADED CAST IRON FITTINGS AND GROOVED END FITTINGS AND COUPLINGS.
- ALL SPRINKLER PIPE HANGERS ARE IN ACCORDANCE WITH NFPA 13.
- ALL PIPE IS SIZES DETERMINED BY HYDRAULIC CALCULATION METHOD AND MAY NOT BE CHANGED WITHOUT RESEARCH AND APPROVAL OF THE FIRE PROTECTION DESIGNER AND THE AUTHORITY HAVING JURISDICTION.
- ALL SPRINKLER PIPE ELEVATIONS ARE MEASURED TO THE CENTER OF PIPE OFF THE FINISHED FLOOR.
- ✓ DENOTES HANGER (REFER TO HANGER # AND ENLARGED DETAIL FOR HANGER COMPONENTS)
- ✚ DENOTES FOUR-WAY SEISMIC BRACING HANGER (REFER TO ENLARGED DETAIL FOR COMPONENTS)
- ↔ DENOTES TWO-WAY SEISMIC BRACING HANGER (REFER TO ENLARGED DETAIL FOR COMPONENTS)
- REPLACE EXISTING UPRIGHT SPRINKLERS WITH NEW BRASS 175° SPRINKLER HEADS
- EXISTING BRANCH LINE PIPING AND HANGERS TO REMAIN. CONNECT TO NEW 6" MAINS WHERE SHOWN

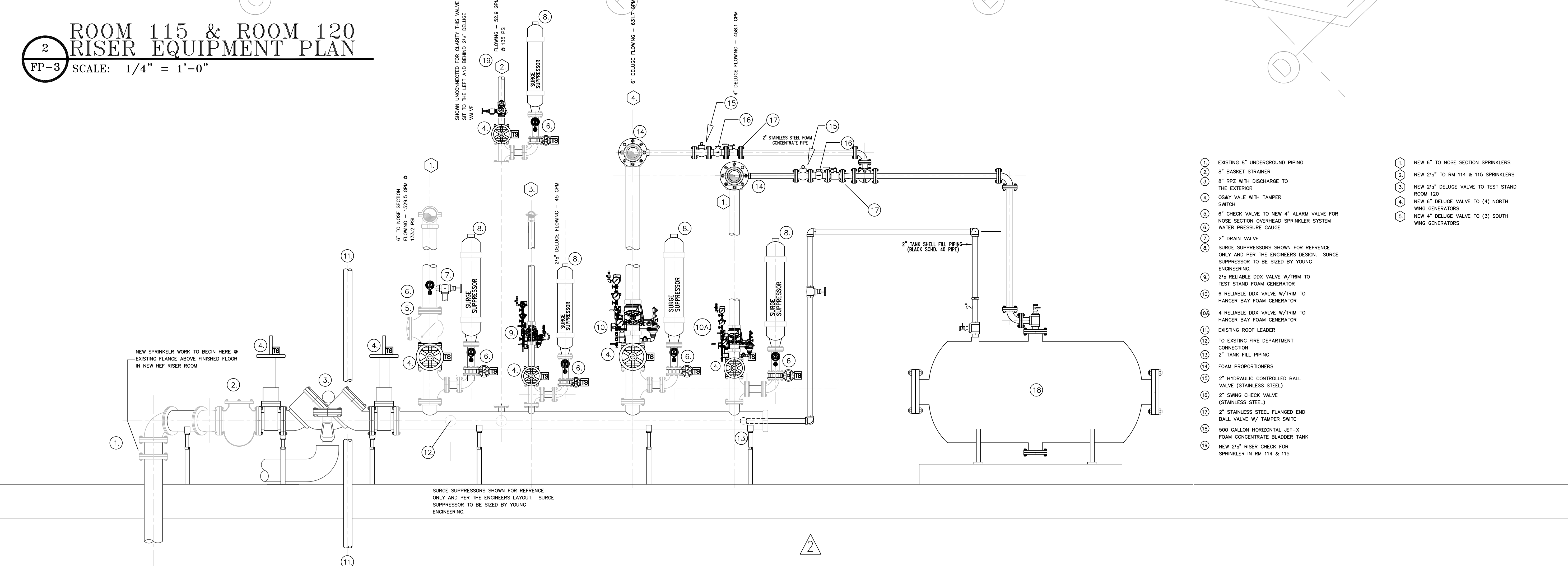
HIGH EXPANSION FOAM SYSTEM NOTES:

- FLUSH ALL EXISTING FIRE PROTECTION PIPING PRIOR TO RE-USE
- SUPPORT FOAM GENERATORS FROM ROOF STRUCTURE
- FOAM GENERATORS WILL DISCHARGE "DOWNWARD". THE LOCATION OF THE FOAM GENERATORS IS DETERMINED SO FOAM FALLS NEAR TO, BUT NOT ONTO AIRCRAFT.
- SIGNAGE SHALL BE PLACED ADJACENT TO EACH FOAM SYSTEM NOTIFICATION APPLIANCE AND MANUAL DISCHARGE (PULL) STATION
- FLUSH HIGH EXPANSION FOAM PIPING WITH WATER ONLY, AND INSPECT THE STRAINER LOCATED AT EACH GENERATOR PRIOR TO FULL SCALE DISCHARGE TEST



2 ROOM 115 & ROOM 120 RISER EQUIPMENT PLAN
FP-3 SCALE: 1/4" = 1'-0"

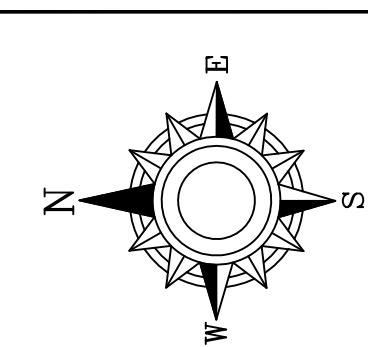
4 KEY PLAN
FP-3 NOT TO SCALE



3 ROOM 115 RISER EQUIPMENT ELEVATION
FP-3 SCALE: 3/4" = 1'-0"

- LEGEND
- CONNECT TO EXISTING
 - REMOVE
 - HANGER
 - RISE UP
 - DROP DOWN
 - HYDRAULIC NODE
 - COMMON CONNECTION

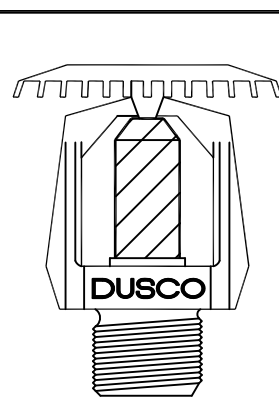
THIS PROFESSIONAL ENGINEER SEAL REPRESENTS THAT THE FIRE PROTECTION SYSTEM LAYOUT INDICATED BY THESE DRAWINGS HAS BEEN PREPARED IN ACCORDANCE WITH APPLICABLE NFPA STANDARDS AND THE PROJECT CRITERIA FURNISHED BY OTHERS. THE "DESIGN DELEGATION" PROVISIONS OF THE RULES OF THE BOARD OF REGENTS 29.3 REQUIRE THE ENGINEER OF RECORD TO A) REVIEW AND APPROVE THE DESIGN SUBMITTED FOR CONFORMANCE WITH THE ESTABLISHED SPECIFICATIONS AND PARAMETERS AND B) DETERMINE THAT THE DESIGN CONFORMS TO THE OVERALL PROJECT DESIGN AND CAN BE INTEGRATED INTO SUCH DESIGN. SUCH DETERMINATIONS MUST BE IN WRITING.



REVISIONS			
DATE	DESCRIPTION	BY	CHK
1/22/08	SUBMITTED FOR REVIEW AND COMMENT TO OMEGA	Δ	Δ
4/22/08	4/3 FOAM GENERATOR SPLIT PER CHA	Δ	Δ

TO PREVENT FREEZING OF IMPORTANT SPRINKLER PIPING, OWNERS TO PROVIDE SUFFICIENT HEAT THROUGHOUT AREAS WHERE SPRINKLER PIPES ARE INSTALLED, UNLESS AN ANTI-FREEZE SYSTEM.

SPRINKLER SYMBOLS									
SYM	CNT	POSITION	FINISH	TEMP	SIN #	NPT	MFG.	MODEL#	
○	298	UPR	BRASS	175	R3625	1/2"	RELIABL	F1FR	
⊗	7	FG	RED	N/A	2"		ANSUL	JETX-15A	
⊙	6	PEND	WHITE	155	R3615	1/2"	RELIABL	G4A	
⊗	19	UPR	BRASS	200	R3625	1/2"	RELIABL	F1FR	

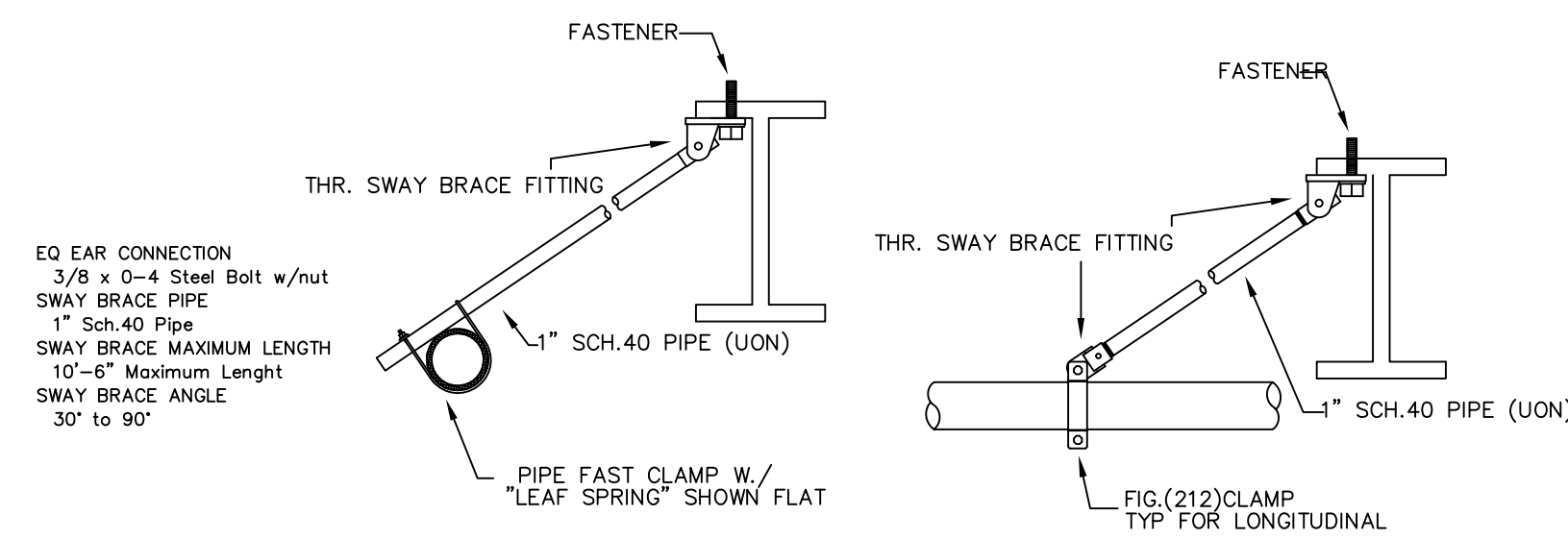


DAVIS-ULMER
FIRE PROTECTION AND SECURITY SYSTEMS
7633 EDGECOMB DRIVE
LIVERPOOL, N.Y. 13088
(315)451-0971

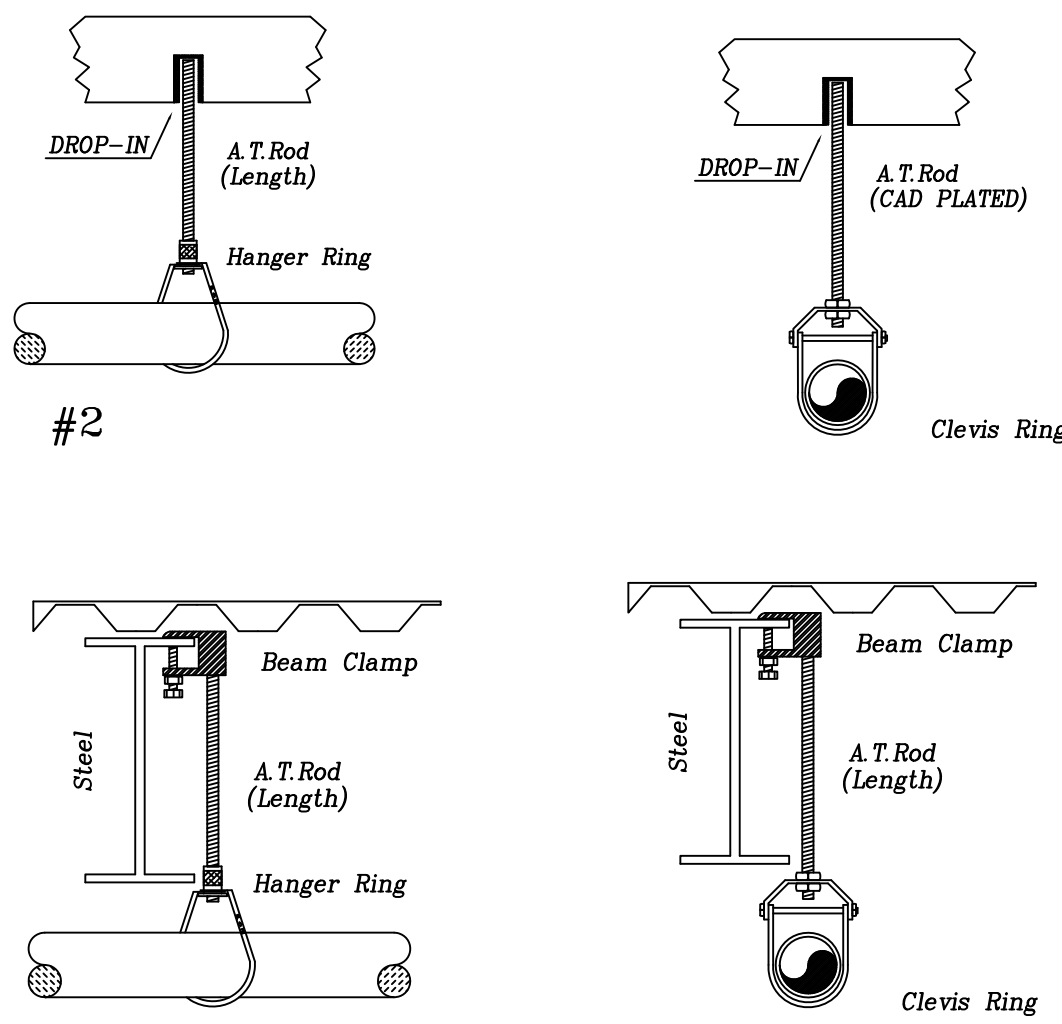
STEWART ANG
BLDG. #102
NEWBURGH NEW YORK

DRAWING DESCRIPTION: NOSE SECTION OVERHEAD SPRINKLER SYSTEM

FIRE PROTECTION	
PERMIT NO.	
CONTRACT NO.	732001
APPROVAL	
DRAWN BY	D. MARCONO
SCALE	AS SHOWN
DATE	2/26/08
REVISED: 3/31/08	
PRINTED	FP 3 of 5



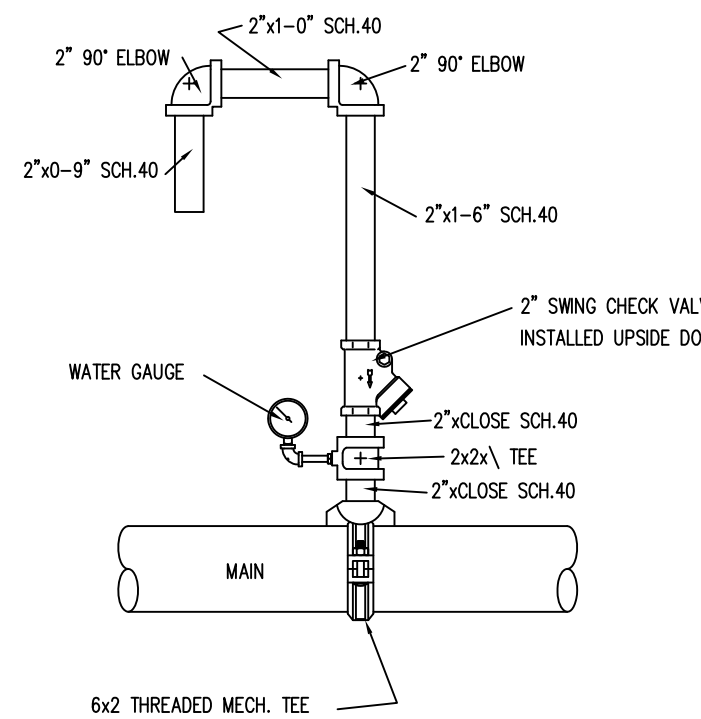
SEISMIC BRACE NOTES:
LATERAL BRACE MAX 40' ON CENTER
LONGITUDINAL BRACE MAX 80' ON CENTER



NOTE - USE CLAYTON HANGERS FOR PIPING 4\"/>

3 TYPICAL HANGERS

FP-4 NOT TO SCALE



4 AIR VENTS

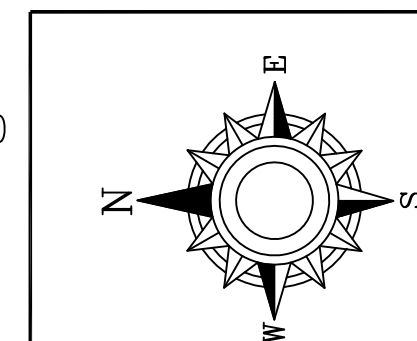
FP-4 NOT TO SCALE
TYPICAL OF 4

GENERAL NOTES:
ALL 2 1/2\"/>

DESIGN CRITERIA:
HYDRAULICALLY CALCULATED WET PIPE SYSTEM OF AUTOMATIC SPRINKLERS INSTALLED IN RENOVATED
THE SYSTEM IS DESIGNED TO PROVIDE A DENSITY OF 0.20 GPM/SQ. FT. OVER THE MOST REMOTE 5000 SQUARE FEET.
A 250 GPM HOSE ALLOWANCE IS REQUIRED. THE MAXIMUM ALLOWABLE AREA OF COVERAGE
PER SPRINKLER IS 100 SQ. FT.

- LEGEND
- CONNECT TO EXISTING
 - REMOVE
 - HANGER
 - RISE UP
 - DROP DOWN
 - HYDRAULIC NODE
 - COMMON CONNECTION

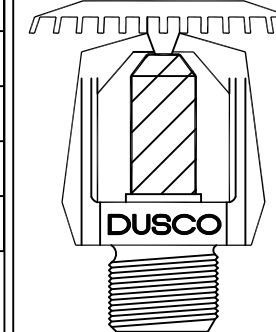
THIS PROFESSIONAL ENGINEER SEAL REPRESENTS THAT THE FIRE PROTECTION SYSTEM LAYOUT INDICATED
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OF THE BOARD OF RESIDENTS 29.3 REQUIRE THE ENGINEER OF RECORD TO A) REVIEW AND APPROVE
THE DESIGN SUBMITTED FOR CONFORMANCE WITH THE ESTABLISHED SPECIFICATIONS AND PARAMETERS
AND B) DETERMINE THAT THE DESIGN CONFORMS TO THE OVERALL PROJECT DESIGN AND CAN BE
INTEGRATED INTO SUCH DESIGN. SUCH DETERMINATIONS MUST BE IN WRITING.



REVISIONS		BY	DATE
1	SUBMITTED FOR REVIEW AND COMMENT TO OMEGA	Δ	12/27/08
2	4/3 FOAM GENERATOR SPLIT PER CHA	Δ	4/22/08
IMPORTANT			
TO PREVENT FREEZING OF WATER IN WET PIPE SPRINKLER PIPING,			
OWNERS TO PROVIDE SUFFICIENT HEAT THROUGHOUT AREAS WHERE			
SPRINKLER PIPES ARE INSTALLED, UNLESS AN ANTI-FREEZE SYSTEM			

SPRINKLER SYMBOLS									
SYM	CNT	POSITION	FINISH	TEMP	BIN #	NPT	MFG.	MODEL#	
○	298	UPR	BRASS	175	R3625	1/2"	RELIABL	F1FR	
⊗	7	FG	RED	N/A	2"		ANSUL	JETX-15A	
⊙	6	PEND	WHITE	155	R3615	1/2"	RELIABL	G4A	
⊗	19	UPR	BRASS	200	R3625	1/2"	RELIABL	F1FR	

SCALE: 1/8"=1'-0"



DAVIS-ULMER
FIRE PROTECTION AND SECURITY SYSTEMS
7633 EDGECOMB DRIVE
LIVERPOOL, N.Y. 13088
(315)451-0971

STEWART ANG
BLDG. #102
NEWBURGH NEW YORK

DRAWING DESCRIPTION: NOSE SECTION OVERHEAD SPRINKLER SYSTEM

FIRE PROTECTION	
PERMIT NO.	
CONTRACT NO.	732001
APPROVAL	
DRAWN BY	D. MARCANO
SCALE	AS SHOWN
DATE	2/26/08
REVISED: 3/31/08	
PLATTED	FP 4 of 5

GENERAL SPRINKLER SYSTEM NOTES:

- ALL WORK TO BE IN ACCORDANCE WITH NFPA 13, AIR NATIONAL GUARD DESIGN POLICY, AIR FORCE ETL & ALL OTHER AUTHORITIES HAVING JURISDICTION
- ALL SPRINKLER & HIGH EXPANSION FOAM PIPING IS SCHEDULE 40 BLACK STEEL JOINED WITH WELDED OUTLET FITTINGS (GROOVED/THREADED) AND GROOVED END MECHANICAL TYPE FITTINGS AND COUPLINGS
- ALL SPRINKLER PIPING AND HIGH EXPANSION FOAM BRANCHLINES ARE SCHEDULE 40 BLACK STEEL PIPE WITH THREADED CAST IRON FITTINGS AND GROOVED END FITTINGS AND COUPLINGS
- ALL SPRINKLER PIPE HANGERS ARE IN ACCORDANCE WITH NFPA 13
- ALL PIPE IS SIZES DETERMINED BY HYDRAULIC CALCULATION METHOD AND MAY NOT BE CHANGED WITHOUT RESEARCH AND APPROVAL OF THE FIRE PROTECTION DESIGNER AND THE AUTHORITY HAVING JURISDICTION
- ALL SPRINKLER PIPE ELEVATIONS ARE MEASURED TO THE CENTER OF PIPE OFF THE FINISHED FLOOR
- ⊗ DENOTES HANGER (REFER TO HANGER # AND ENLARGED DETAIL FOR HANGER COMPONENTS)
- ⊕ DENOTES FOUR-WAY SEISMIC BRACING HANGER (REFER TO ENLARGED DETAIL FOR COMPONENTS)
- ⊕⊕ DENOTES TWO-WAY SEISMIC BRACING HANGER (REFER TO ENLARGED DETAIL FOR COMPONENTS)
- REPLACE EXISTING UPRIGHT SPRINKLERS WITH NEW BRASS 175" SPRINKLER HEADS
- EXISTING BRANCH LINE PIPING AND HANGERS TO REMAIN. CONNECT TO NEW 6" MAINS WHERE SHOWN

HIGH EXPANSION FOAM SYSTEM NOTES:

- FLUSH ALL EXISTING FIRE PROTECTION PIPING PRIOR TO RE-USE
- SUPPORT FOAM GENERATORS FROM ROOF STRUCTURE
- FOAM GENERATORS WILL DISCHARGE "DOWNWARD". THE LOCATION OF THE FOAM GENERATORS IS DETERMINED SO FOAM FALLS NEAR TO, BUT NOT ONTO AIRCRAFT.
- SIGNAGE SHALL BE PLACED ADJACENT TO EACH FOAM SYSTEM NOTIFICATION APPLIANCE AND MANUAL DISCHARGE (PULL) STATION
- FLUSH HIGH EXPANSION FOAM PIPING WITH WATER ONLY, AND INSPECT THE STRAINER LOCATED AT EACH GENERATOR PRIOR TO FULL SCALE DISCHARGE TEST

AS-BUILT DRAWING

HANGAR 300

HIGH EXPANSION FOAM CONVERSION
HANGAR 300 (MARINES)
105th AIRLIFT WING
STEWART AIR NATIONAL GUARD BASE
NEWBURGH, NY
TASK ORDER 0024: WHAY 032034
JULY 2004



DRAWING LIST	
DRAWING No.	T I T L E
T-1	TITLE SHEET
FP-1	LEGEND, NOTES AND DETAILS
FP-2	DEMOLITION PLAN WEST
FP-3	DEMOLITION PLAN EAST
FP-4	HIGH EXPANSION FOAM SYSTEM WEST
FP-5	HIGH EXPANSION FOAM SYSTEM EAST
FP-6	BUILDING SECTION
FA-1	FIRE ALARM DEMOLITION PLAN
FA-2	FIRE ALARM PLAN - NEW WORK
D-1	EXISTING FIRE ALARM DRAWINGS (FOR INFORMATION ONLY)
D-2	
D-3	
D-4	
D-5	
D-6	

WORK PHASING:

1. A PERIOD OF 90 DAYS SHALL BE ALLOWED FOR ALL FIRE PROTECTION SYSTEM INSTALLATIONS AND MODIFICATIONS. DURING THIS PERIOD, THE AIRCRAFT MAINTENANCE AND STORAGE AREAS WILL BE UNOCCUPIED. CONTRACTOR SHALL COMPLETE ALL WORK AS SHOWN ON THE CONTRACT DOCUMENTS AND PROVIDE COMPLETE AND OPERATIONAL SYSTEMS BY THE END OF THE 90 DAY PERIOD. THE 90 DAY PERIOD WILL COMMENCE WHEN CONTRACTOR MOBILIZATION BEGINS IN THE HANGAR, AND THE EXISTING FIRE PROTECTION SYSTEM IS NO LONGER FUNCTIONAL.
2. EXTENSIONS TO THE 90 DAY PERIOD WILL NOT BE CONSIDERED. CONTRACTOR SHALL PROVIDE ALL NECESSARY LABOR AND MATERIALS TO COMPLETE ALL WORK WITHIN 90 DAYS.
3. SUBMITTALS SHALL BE PROVIDED PER SECTION 01330 OF THE PROJECT SPECIFICATIONS. TO HELP INSURE THAT ALL WORK SHALL BE COMPLETED IN THE ALLOTTED TIME FRAME, THE FOLLOWING SUBMITTAL ITEMS SHALL BE PRIORITIZED:

PROPOSED PROJECT SCHEDULE

EQUIPMENT SUBMITTALS FOR LONG LEAD EQUIPMENT (ANY EQUIPMENT WITH A LEAD TIME GREATER THAN 4 WEEKS)

COPY OF PURCHASE ORDER FOR LONG LEAD EQUIPMENT (CONTRACTOR SHALL IMMEDIATELY ORDER SUCH EQUIPMENT UPON RECEIPT OF ENGINEER'S APPROVAL OF EQUIPMENT SUBMITTALS).
LONG LEAD ITEMS INCLUDE BUT ARE NOT LIMITED TO: FOAM GENERATORS, CONCENTRATE TANKS, PROPORTIONERS

REMAINING SUBMITTALS SHALL BE PROVIDED AS SPECIFIED IN SECTION 01330 OF THE PROJECT SPECIFICATIONS.



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III WINNERS CIRCLE ALBANY, NEW YORK - 12205

**CLOUGH, HARBOUR
& ASSOCIATES LLP**

ENGINEERS, SURVEYORS, PLANNERS
& LANDSCAPE ARCHITECTS

III WINNERS CIRCLE ALBANY, NEW YORK - 12205

CHA Project No. 12388

HEF SEQUENCE OF OPERATION: (REFER TO FIRE ALARM LOGIC MATRIX ON FA-2)

- ### 1. MANUAL ACTIVATION – HEF MANUAL RELEASE STATION

SOUND HEF ALARM - A "HIGH-LOW" TONE

TRANSMIT A CONFIRMED FIRE, HEF ALARM AT THE BUILDING FSCP, AND TRANSMIT TO BASE RECEIVING STATION
OPEN ALL PRE-ACTION VALVES AND THE CONCENTRATE SOLENOID VALVE SUPPLYING THE PROPORTIONER.

FIRE PUMP STARTS UPON DROP IN SYSTEM PRESSURE.

ACTIVATE ANY DIVERSION/SHUTDOWN VALVES IN THE HANGAR FLOOR DRAINAGE SYSTEM.

ACTIVATE ANY HANGAR EXHAUST FAN SHUT-DOWNS.

CLOSE GAS VALVE, (HANGAR BAY ONLY)

ACTIVATE GENERAL BUILDING ALARM.

- ## 2. HEAT DETECTOR SEQUENCE

ACTIVATION OF ONE (1) OVERHEAD HEAT DETECTOR (UNCONFIRMED FIRE) WILL:

SOUND HEF ALARM - A "HIGH-LOW" TONE

TRANSMIT A CONFIRMED FIRE, HEF ALARM AT THE BUILDING FSCP, AND TRANSMIT TO BASE RECEIVING STATION

ACTIVATION OF TWO (2) CROSS-ZONED DETECTORS, CONFIRMED FIRE WILL:

TRANSMIT A CONFIRMED FIRE, HEF ALARM AT THE BUILDING FSCP, AND TRANSMIT TO BASE RECEIVING STATION

OPEN ALL PRE-ACTION VALVES AND THE CONCENTRATE SOLENOID VALVE SUPPLYING THE PROPORTIONER.

FIRE PUMP STARTS UPON DROP IN SYSTEM PRESSURE

ACTIVATE ANY DIVERSION/SHUTDOWN VALVES IN THE HANGAR FLOOR DRAINAGE SYSTEM.

ACTIVATE ANY HANGAR EXHAUST FAN SHUT-DOWNS

CLOSE GAS VALVE, (HANGAR BAY ONLY)

ACTIVATE GENERAL BUILDING ALARM.

- ### 3. SPRINKLER DISCHARGE SEQUENCE

DISCHARGE FROM ANY HANGAR BAY SPRINKLER HEAD WILL:

SOUND HEF ALARM - A "HIGH-LOW" TONE

TRANSMIT A CONFIRMED FIRE, HEF ALARM AT THE BUILDING FSCP, AND TRANSMIT TO BASE RECEIVING STATION

OPEN ALL PRE-ACTION VALVES AND THE CONCENTRATE SOLENOID CALCE SUPPLYING THE PROPORTIONER.





FIRE PUMP STARTS UPON DROP IN SYSTEM PRESSURE

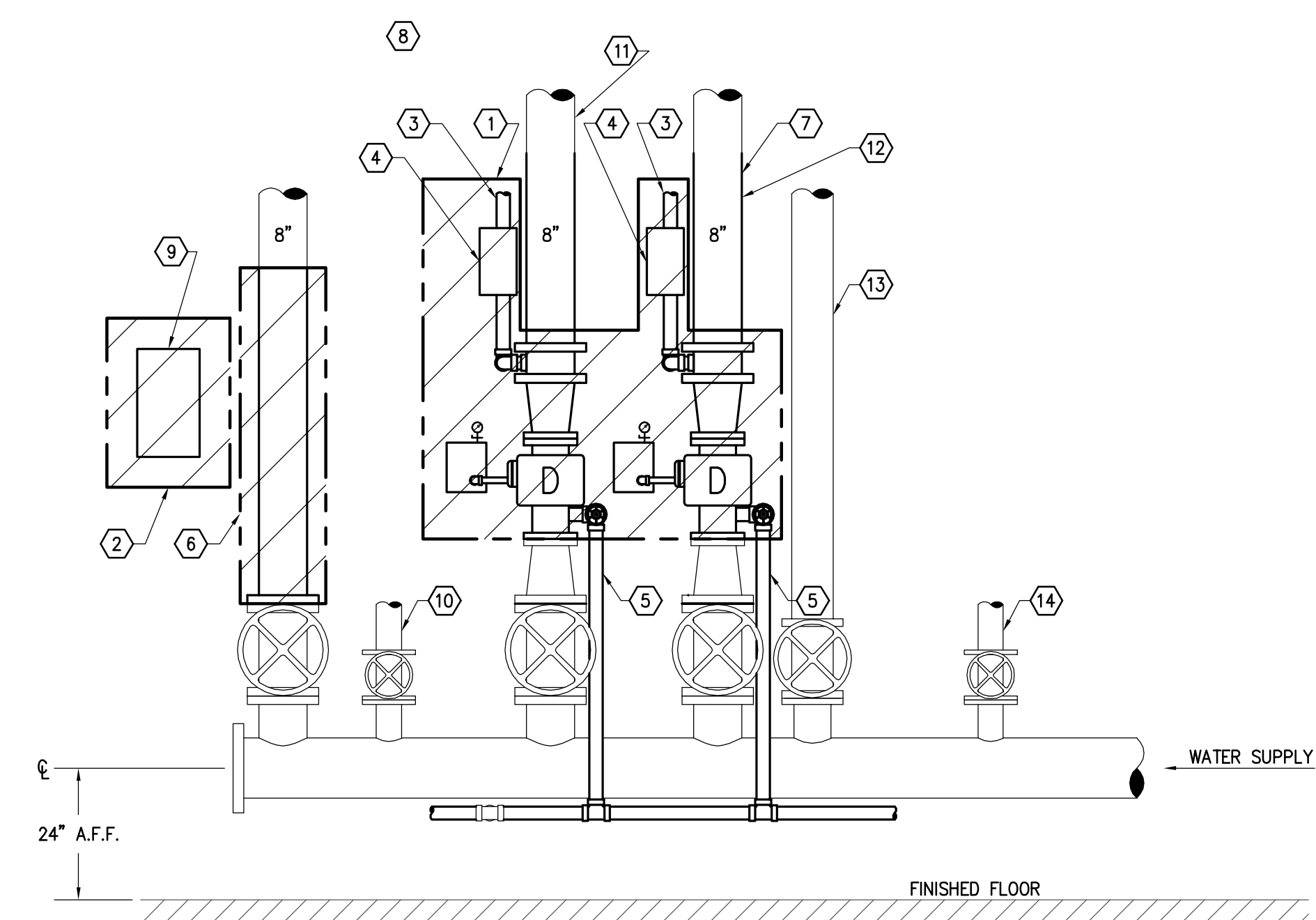
ACTIVATE ANY DIVERSION/SHUTDOWN VALVES IN THE HANGAR FLOOR DRAINAGE SYSTEM.

ACTVATE ANY HANGAR EXHAUSET FAN SHUT-DOWNS


CLOSE GAS VALVE, (HANGAR BAY ONLY)

ACTIVATE GENERAL BUILDING ALARM

Revisions:	Drawn By:	App'd. By:	Date:		Designed By:	Date:		 ROLF, JENSEN & ASSOCIATES, INC. 3040 WILLIAMS DRIVE SUITE 400 FAIRFAX, VA 22031-4618	 CLOUGH, HARBOUR & ASSOCIATES LLP ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS 111 WINNERS CIRCLE - ALBANY, NEW YORK - 12206 518-453-4500	OHA Project No. 12388	STEWART AIR NATIONAL GUARD NEWBURGH, NY HIGH EXPANSION FOAM SYSTEM CONVERSION	Drawing No. T-1	
▲ ISSUED FOR BID			2/23/04		Drawn By:	Date:							10/03
▲ ISSUED FOR BID/ANG COMMENTS COMPLETE			5/11/04		DAG	Date:							10/03
▲ ISSUED FOR BID/ANG COMMENTS COMPLETE			7/7/04		UT	Date:							10/03
					UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW								
											</		



- (1) REMOVE EXISTING DELUGE VALVES AND ALL APPURTENANCES ON PRE-ACTION RISERS.
- (2) REMOVE EXISTING WALL MOUNTED PRE-ACTION COMPRESSOR. REMOVE POWER WIRING BACK TO NEAREST JUNCTION BOX.
- (3) REMOVE EXISTING FOAM CONCENTRATE PIPING. SEE DWG. FP-2 AND FP-3 FOR ADDITIONAL REMOVALS.
- (4) REMOVE EXISTING FOAM CONCENTRATE SOLENOID VALVES.
- (5) EXISTING 2" DRAIN RISER TO BE RE-USED.
- (6) REMOVE SECTION OF EXISTING RISER AS NECESSARY TO INSTALL NEW HI-EX FOAM DELUGE VALVE. SEE DWG. FP-5 FOR DELUGE VALVE INSTALLATION.
- (7) REMOVE SECTION OF EXISTING RISER AS NECESSARY TO INSTALL NEW HI-EX FOAM DELUGE VALVE. SEE DWG. FP-5 FOR NEW WORK ON RISER.
- (8) SEE DWG. FP-5 FOR NEW WORK ON RISERS.
- (9) EXISTING PRE-ACTION WALL MOUNTED COMPRESSOR
- (10) EXISTING DRY RISER TO REMAIN
- (11) EXISTING PRE-ACTION RISER WEST
- (12) EXISTING PRE-ACTION RISER EAST
- (13) EXISTING STANDPIPE RISER TO REMAIN
- (14) EXISTING 4" WET RISER TO REMAIN

$1/8" = 1'-0"$
 0 8'-0" 16'-0"

 Scale in feet

HANGAR 300 HIGH EXPANSION FOAM SYSTEM		Drawing No. FP-3
DEMOLITION PLAN EAST		
SCALE: AS NOTED	DATE: JULY 2004	SHEET 4 OF 9

HANGAR 301

HIGH EXPANSION FOAM CONVERSION
HANGAR 301 (MARINES)
105th AIRLIFT WING
STEWART AIR NATIONAL GUARD BASE
NEWBURGH, NY
TASK ORDER 0024: WHAY 032034
JULY 2004



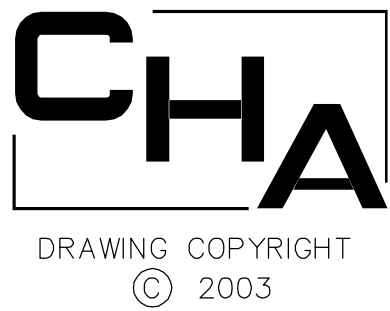
DRAWING LIST	
DRAWING No.	T I T L E
T-1	TITLE SHEET
FP-1	LEGEND, NOTES AND DETAILS
FP-2	DEMOLITION PLAN
FP-3	HIGH EXPANSION FOAM SYSTEM
FP-4	BUILDING SECTION
FA-1	FIRE ALARM DEMOLITION PLAN
FA-2	FIRE ALARM PLAN - NEW WORK
D-1	EXISTING FIRE ALARM DRAWINGS
D-2	(FOR INFORMATION ONLY)

HEF SEQUENCE OF OPERATION:

- MANUAL ACTIVATION – HEF MANUAL RELEASE STATION
 - SOUND HEF ALARM – A “HIGH-LOW” TONE
 - TRANSMIT A CONFIRMED FIRE, HEF ALARM AT THE BUILDING FSOP, AND TRANSMIT TO BASE RECEIVING STATION
 - OPEN ALL PRE-ACTION VALVES AND THE CONCENTRATE SOLENOID VALVE SUPPLYING THE PROPORTIONER.
 - FIRE PUMP STARTS UPON DROP IN SYSTEM PRESSURE.
 - ACTIVATE ANY DIVERSION/SHUTDOWN VALVES IN THE HANGAR FLOOR DRAINAGE SYSTEM.
 - ACTIVATE ANY HANGAR EXHAUST FAN SHUT-DOWNS.
 - CLOSE GAS VALVE, (HANGAR BAY ONLY)
 - ACTIVATE GENERAL BUILDING ALARM.
- HEAT DETECTOR SEQUENCE
 - ACTIVATION OF ONE (1) OVERHEAD HEAT DETECTOR (UNCONFIRMED FIRE) WILL:
 - SOUND HEF ALARM – A “HIGH-LOW” TONE
 - TRANSMIT A CONFIRMED FIRE, HEF ALARM AT THE BUILDING FSOP, AND TRANSMIT TO BASE RECEIVING STATION
 - ACTIVATION OF TWO (2) CROSS-ZONED DETECTORS, CONFIRMED FIRE WILL:
 - TRANSMIT A CONFIRMED FIRE, HEF ALARM AT THE BUILDING FSOP, AND TRANSMIT TO BASE RECEIVING STATION
 - OPEN ALL PRE-ACTION VALVES AND THE CONCENTRATE SOLENOID VALVE SUPPLYING THE PROPORTIONER.
 - FIRE PUMP STARTS UPON DROP IN SYSTEM PRESSURE
 - ACTIVATE ANY DIVERSION/SHUTDOWN VALVES IN THE HANGAR FLOOR DRAINAGE SYSTEM.
 - ACTIVATE ANY HANGAR EXHAUST FAN SHUT-DOWNS
 - CLOSE GAS VALVE, (HANGAR BAY ONLY)
 - ACTIVATE GENERAL BUILDING ALARM.
- SPRINKLER DISCHARGE SEQUENCE
 - DISCHARGE FROM ANY HANGAR BAY SPRINKLER HEAD WILL:
 - SOUND HEF ALARM – A “HIGH-LOW” TONE
 - TRANSMIT A CONFIRMED FIRE, HEF ALARM AT THE BUILDING FSOP, AND TRANSMIT TO BASE RECEIVING STATION
 - OPEN ALL PRE-ACTION VALVES AND THE CONCENTRATE SOLENOID CALCE SUPPLYING THE PROPORTIONER.
 - FIRE PUMP STARTS UPON DROP IN SYSTEM PRESSURE
 - ACTIVATE ANY DIVERSION/SHUTDOWN VALVES IN THE HANGAR FLOOR DRAINAGE SYSTEM.
 - ACTVATE ANY HANGAR EXHAUSET FAN SHUT-DOWNS
 - CLOSE GAS VALVE, (HANGAR BAY ONLY)
 - ACTIVATE GENERAL BUILDING ALARM

WORK PHASING:

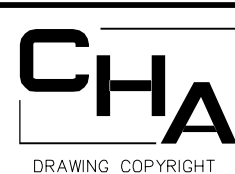
- A PERIOD OF 60 DAYS SHALL BE ALLOWED FOR ALL FIRE PROTECTION SYSTEM INSTALLATIONS AND MODIFICATIONS. DURING THIS PERIOD, THE AIRCRAFT MAINTENANCE AND STORAGE AREAS WILL BE UNOCCUPIED. CONTRACTOR SHALL COMPLETE ALL WORK AS SHOWN ON THE CONTRACT DOCUMENTS AND PROVIDE COMPLETE AND OPERATIONAL SYSTEMS BY THE END OF THE 60 DAY PERIOD. THE 60 DAY PERIOD WILL COMMENCE WHEN CONTRACTOR MOBILIZATION BEGINS IN THE HANGAR, AND THE EXISTING FIRE PROTECTION SYSTEM IS NO LONGER FUNCTIONAL.
- EXTENSIONS TO THE 60 DAY PERIOD WILL NOT BE CONSIDERED. CONTRACTOR SHALL PROVIDE ALL NECESSARY LABOR AND MATERIALS TO COMPLETE ALL WORK WITHIN 60 DAYS.
- SUBMITTALS SHALL BE PROVIDED PER SECTION 01330 OF THE PROJECT SPECIFICATIONS. TO HELP INSURE THAT ALL WORK SHALL BE COMPLETED IN THE ALLOTTED TIME FRAME, THE FOLLOWING SUBMITTAL ITEMS SHALL BE PRIORITIZED:
 - PROPOSED PROJECT SCHEDULE
 - EQUIPMENT SUBMITTALS FOR LONG LEAD EQUIPMENT (ANY EQUIPMENT WITH A LEAD TIME GREATER THAN 4 WEEKS)
 - COPY OF PURCHASE ORDER FOR LONG LEAD EQUIPMENT (CONTRACTOR SHALL IMMEDIATELY ORDER SUCH EQUIPMENT UPON RECEIPT OF ENGINEER'S APPROVAL OF EQUIPMENT SUBMITTALS)
 - LONG LEAD ITEMS INCLUDE BUT ARE NOT LIMITED TO: FOAM GENERATORS, CONCENTRATE TANKS, PROPORTIONERS
 - REMAINING SUBMITTALS SHALL BE PROVIDED AS SPECIFIED IN SECTION 01330 OF THE PROJECT SPECIFICATIONS.



CLOUGH, HARBOUR & ASSOCIATES LLP
ENGINEERS, SURVEYORS, PLANNERS & LANDSCAPE ARCHITECTS
III WINNERS CIRCLE ALBANY, NEW YORK – 12205

Revisions:	Drawn By:	App'd. By:	Date:
ISSUED FOR BID			2/23/04
ISSUED FOR BID/ANG COMMENTS COMPLETE			5/11/04
ISSUED FOR BID/ANG COMMENTS COMPLETE			7/7/04

Designed By:	Date:
DMW	10/03
Drawn By:	Date:
DAG	10/03
Checked By:	Date:
JUT	10/03



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III WINNERS CIRCLE – ALBANY, NEW YORK – 12205
518-453-4500

CHA Project No. 12388

STEWART AIR NATIONAL GUARD
NEWBURGH, NY
FOAM SYSTEM CONVERSION

HANGAR 301 HIGH EXPANSION FOAM SYSTEM

TITLE SHEET

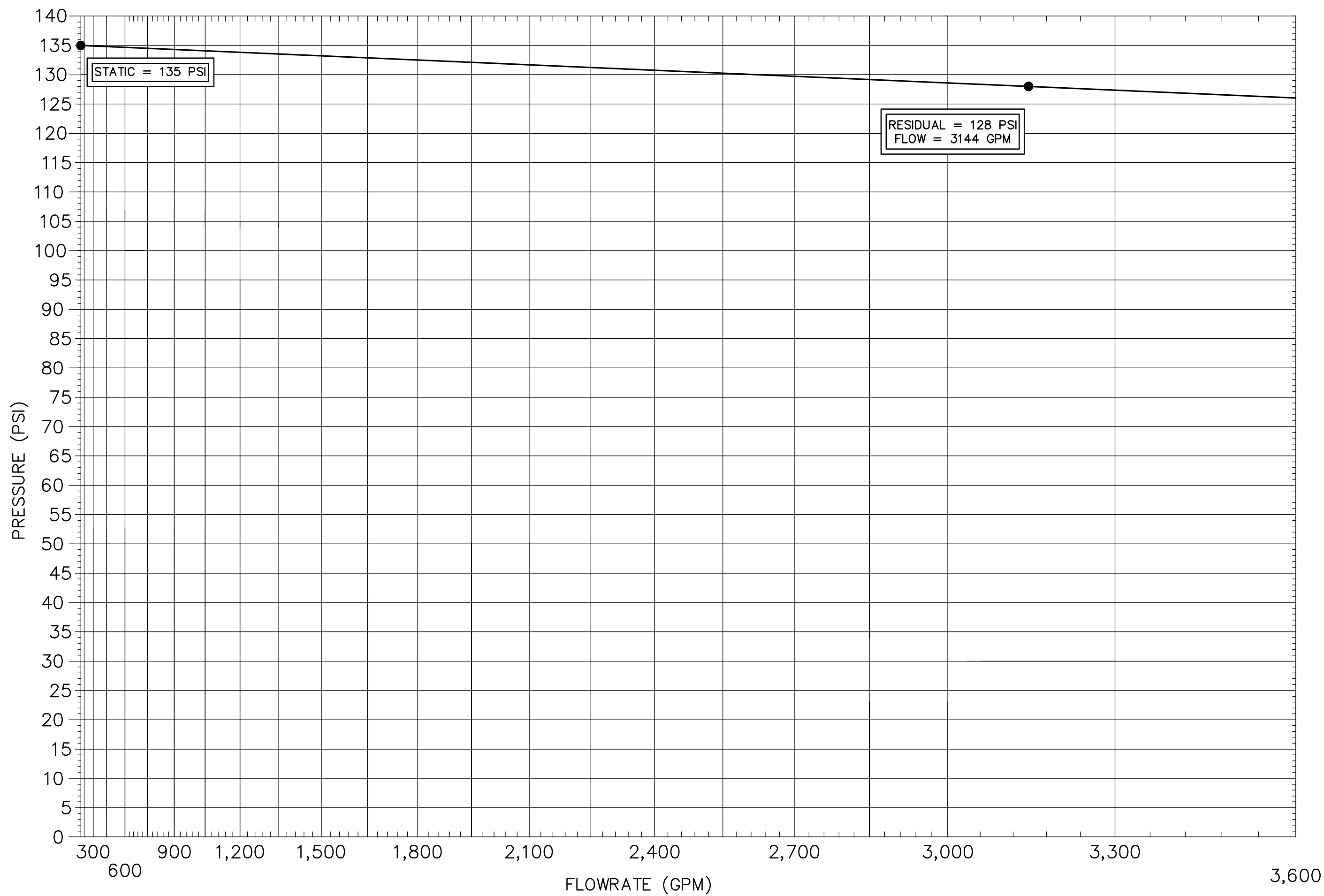
SCALE: NO SCALE

DATE: JULY 2004

Drawing No.

T-1

SHEET 1 OF 7

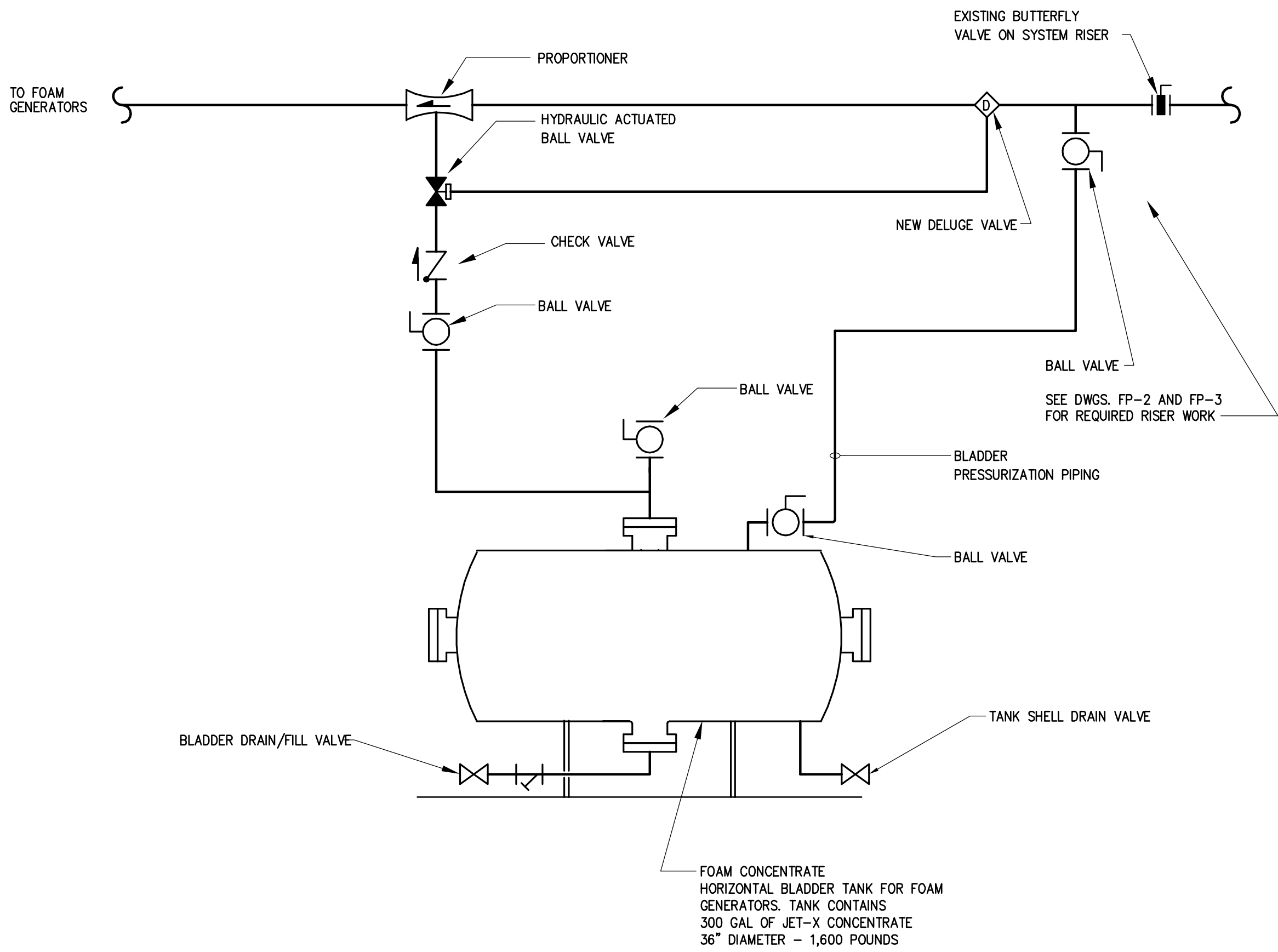


FIRE PROTECTION WATER SUPPLY DATA

WATER FLOW TEST CONDUCTED 11/03/03 BY CHA. HYDRANT #30 GAUGED, HYDRANT #31 FLOWED (SEE PARTIAL SITE PLAN THIS DWG.)

WET PIPE SPRINKLER HEAD SCHEDULE								
TYPE	NOM. ORIFICE SIZE	THREAD SIZE	K-FACTOR	TEMP. RATING	FINISH	MFGR.	MODEL	REMARKS
UPRIGHT	1/2"	1/2"	5.5	175°	BRASS	VIKING	MICROFAST HP MODEL M	QUICK RESPONSE SPRINKLER

FOAM GENERATOR SCHEDULE (BASIS OF DESIGN)							
LABEL	BASIS OF DESIGN	INLET PRESSURE	SOLUTION FLOW	FOAM OUTPUT	EXPANSION RATIO	TYPE	REMARKS
FG-1	ANSUL JET X 15A UL	75 PSI	128 GPM	17,410 CFM	900:1	WATER POWERED	PROVIDE FLOOR STAND - SEE DETAIL THIS DRAWING
FG-2	ANSUL JET X 15A UL	75 PSI	128 GPM	17,410 CFM	900:1	WATER POWERED	CEILING HUNG - PROVIDE MISC. STEEL FOR HANGING

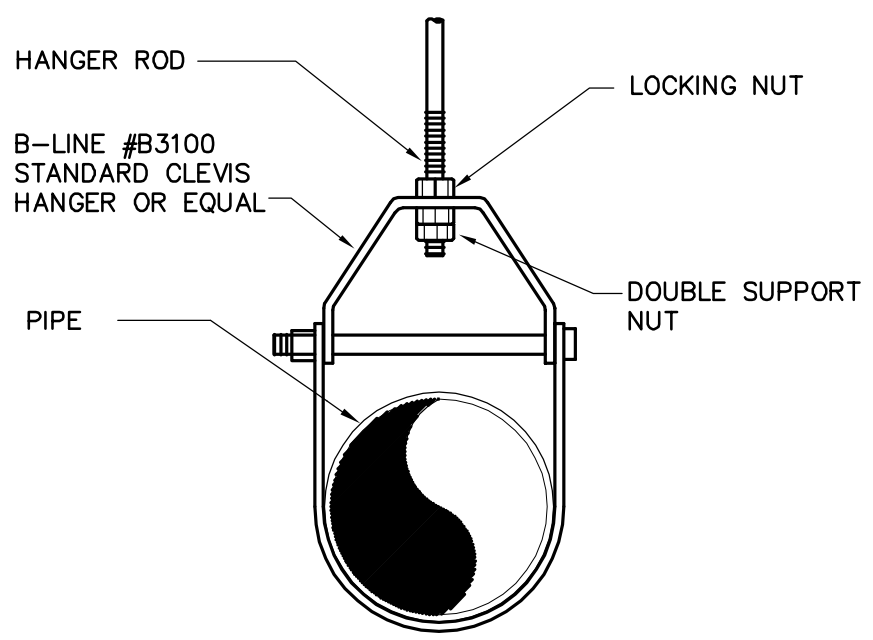


FOAM TANK PIPING SCHEMATIC

NOT TO SCALE

NOTE

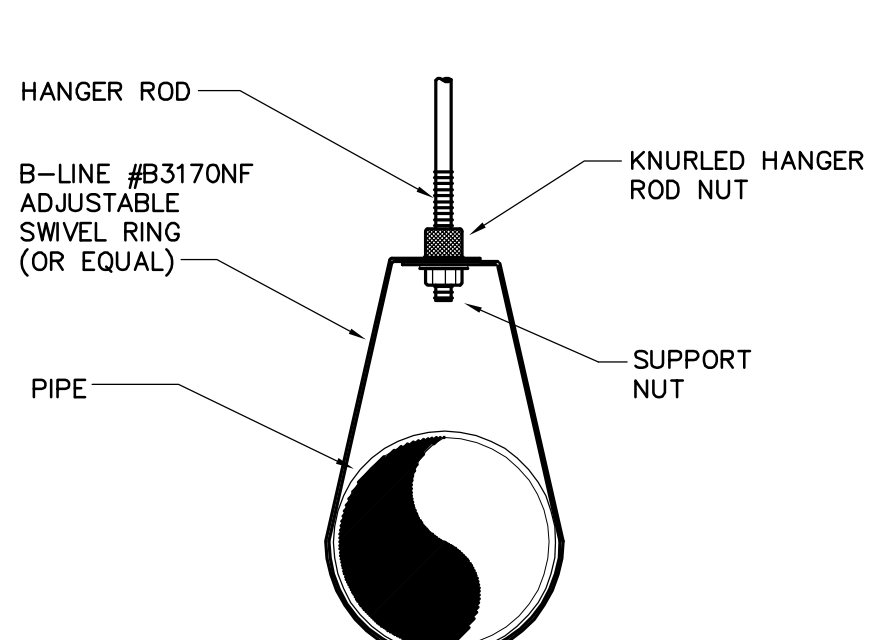
- ALL PIPING 2" UNLESS NOTED OTHERWISE.
- ALL FOAM CONCENTRATE PIPING AND FITTINGS TO BE TYPE 316L STAINLESS STEEL WITH WELDED OR FLANGED FITTINGS.



CLEVIS HANGER

NOT TO SCALE

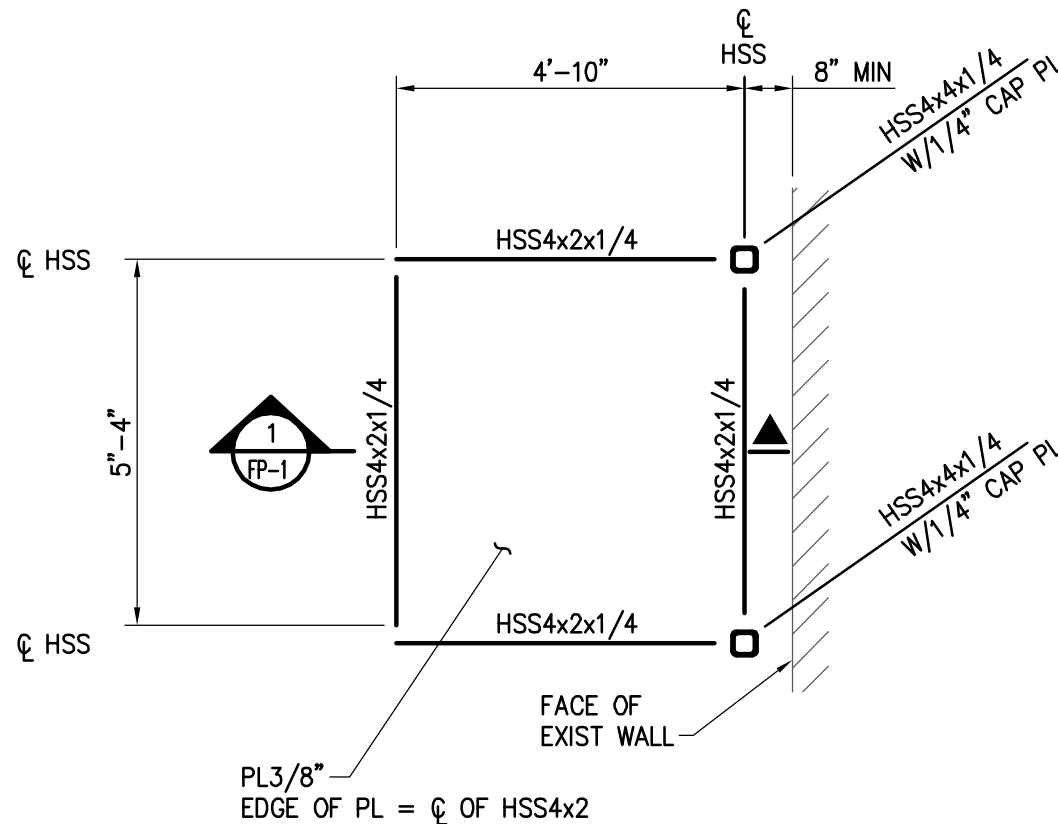
NOTE: FOR PIPE SIZES 4" AND GREATER



SWIVEL RING HANGER

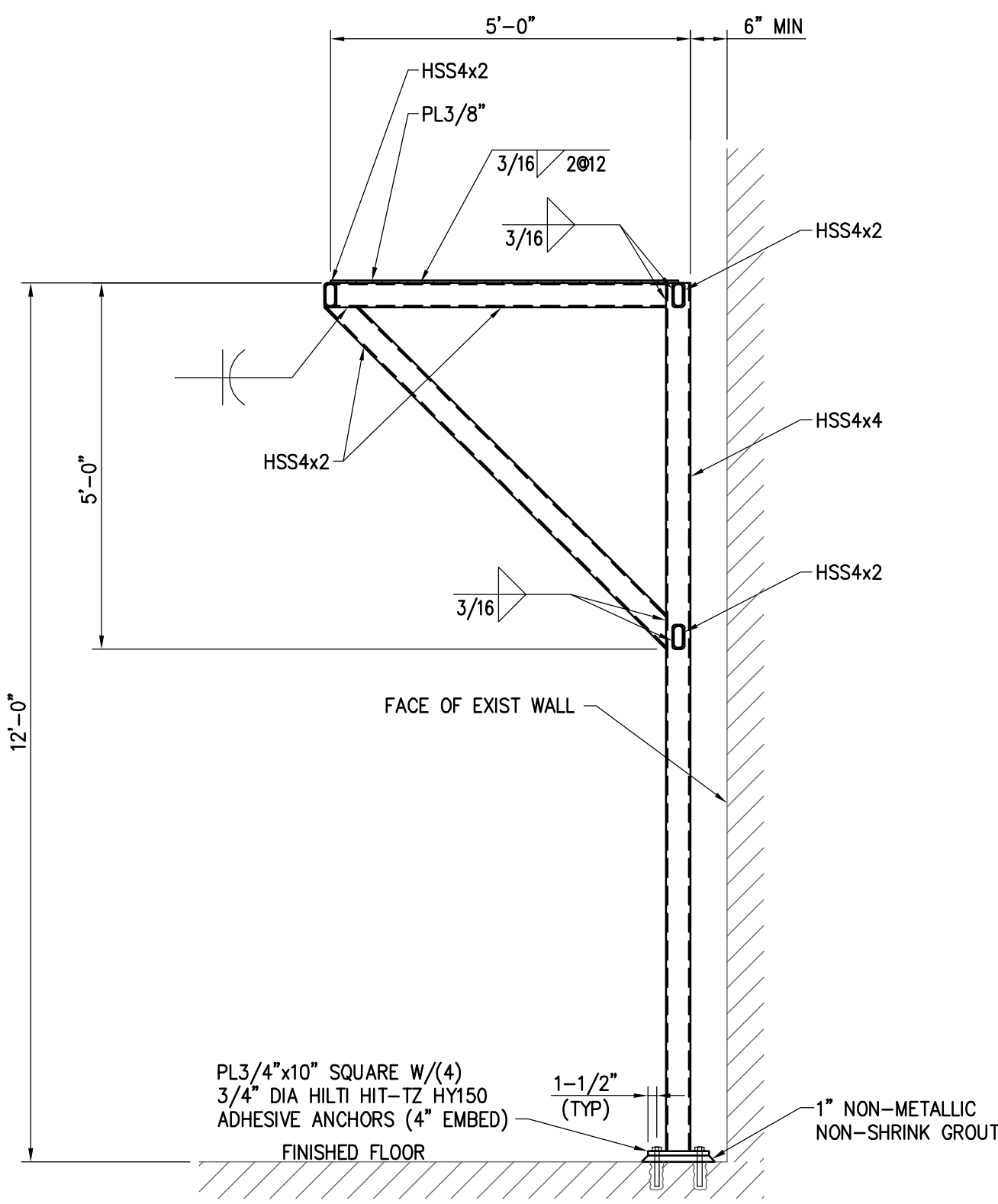
NOT TO SCALE

NOTE: FOR PIPE SIZES 1" - 3"



FOAM GENERATOR STAND PLAN

SCALE: 3/8" = 1'-0"



SECTION

SCALE: 1/2" = 1'-0"

NOTES:

- STRUCTURAL STEEL: HSS SHAPES A500, GRADE B, Fy = 42KSI
STEEL PLATES A36, Fy = 36KSI
- WELD ELECTRODES E70XX AND IN ACCORDING WITH A.W.S.
- NON-METALLIC, NON-SHRINK GROUT: EUCCO N.S. BY EUCCO CHEMICAL COMPANY OR APPROVED EQUAL
- PAINT: SURFACE PREPARATION: SSPC-SP6
SHOP PRIME: SERIES 10 TNEPEC PRIMER, 3.0 MILS BY TNEPEC CO. (OR EQUAL)
FIELD INTERMEDIATE: SERIES 23 ENDURATONE, 3.0 MILS BY TNEPEC CO. (OR EQUAL)
FIELD FINISH: SERIES 23 ENDURATONE, 3.0 MILS BY TNEPEC CO. (OR EQUAL)

DESIGN CRITERIA

WET PIPE SPRINKLER SYSTEM: .20GPM PER SQ. FT. OVER MOST REMOTE 5000 SQ. FT.

LOW LEVEL HIGH EXPANSION FOAM SYSTEM: MINIMUM APPLICATION RATE - 2.6 CU. FT. PER MINUTE PER SQ. FT.

COVERAGE OF 90% OF THE AIRCRAFT SILHOUETTE SHALL BE ACHIEVED IN ONE MINUTE OR LESS.

AIRCRAFT SERVICE AREA SHALL BE COVERED TO A DEPTH OF 3.2 FT. IN 4 MINUTES OR LESS

SCOPE OF WORK SUMMARY:

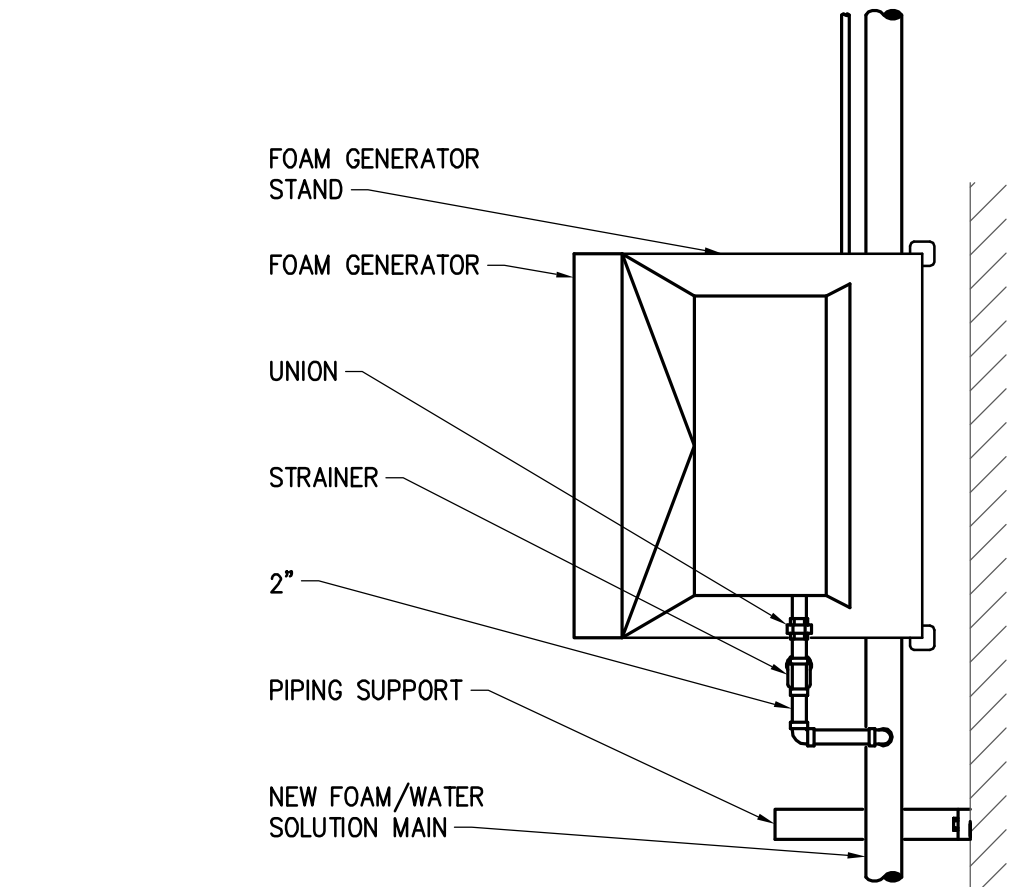
- COMPLETELY REMOVE EXISTING 1300 GALLON AFFT CONCENTRATE TANKS FROM MECHANICAL ROOM. DUE TO LIMITED CLEARANCES WITH EXISTING EQUIPMENT, THE TANKS WILL HAVE TO BE CUT INTO PIECES TO BE REMOVED. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY HOT WORK PERMITS REQUIRED AND FOR ALL COORDINATION REQUIRED WITH THE ANG. REMOVAL IS TO INCLUDE ALL ASSOCIATED PIPING, VALVES, HANGERS, ETC. - SEE CONTRACT DRAWINGS FOR SPECIFIC LIMITS OF REMOVALS.
- COMPLETELY REMOVE THE EXISTING UNDER WING AFFT SYSTEM PIPING, FOAM MONITORS, ASSOCIATED PIPING, VALVES, HANGERS, ETC. BACK TO THE RISER IN THE MECHANICAL ROOM. REMOVE EXISTING PROPORTIONER AND SOLENOID RELEASE VALVE.
- REMOVE EXISTING LINEAR DETECTION SYSTEM AND ASSOCIATED ALARM PANEL.
- REMOVE ALL EXISTING SPRINKLER HEADS IN THE AIRCRAFT MAINTENANCE AND STORAGE AREA.
- PROVIDE NEW HIGH EXPANSION FOAM SYSTEM (HI-EX) FOR THE AIRCRAFT MAINTENANCE AND STORAGE AREA. NEW HI-EX SYSTEM SHALL BE SUPPLIED FROM EXISTING FIRE PROTECTION HEADER IN MECHANICAL ROOM. SYSTEM SHALL INCLUDE NEW PIPING, HANGERS, VALVES, CONCENTRATE TANK, FOAM PROPORTIONERS, FOAM GENERATORS, GENERATOR STANDS AND HANGERS (SEE DRAWINGS) FOR A COMPLETE AND CODE COMPLIANT SYSTEM.
- PROVIDE NEW DETECTION AND FOAM RELEASE SYSTEM. SYSTEM SHALL INCLUDE A NEW FIRE ALARM CONTROL PANEL (FACP) NEW RATE COMPENSATED TYPE HEAT DETECTORS, WIRING, MANUAL FOAM RELEASE STATIONS, SEPARATE FOAM RELEASE PANEL, AND APPURTENANCES FOR A COMPLETE AND CODE COMPLIANT SYSTEM. FACP SHALL PROVIDE CAPACITY FOR THE TIE IN OF EXISTING ALARM FUNCTIONS FOR THE ENTIRE BUILDING. CONTRACTOR SHALL BE RESPONSIBLE FOR INTEGRATING EXISTING BUILDING ALARM FUNCTIONS AND ALL NEW ALARM FUNCTIONS INTO NEW FACP.
- PROVIDE NEW OVERHEAD WET TYPE SPRINKLER SYSTEM. SYSTEM SHALL UTILIZE EXISTING OVERHEAD DELUGE PIPING AND RISERS. PROVIDE NEW RISER CHECK VALVES AND APPURTENANCES. EXISTING PIPING SHALL BE COMPLETELY FLUSHED AND HYDROSTATICALLY TESTED PER CODE. PROVIDE NEW QUICK RESPONSE SPRINKLER HEADS. CONTRACTOR SHALL BE RESPONSIBLE FOR A COMPLETE AND CODE COMPLIANT SYSTEM.

LEGEND:

- PIPE ELBOW UP
- PIPE ELBOW DN
- PIPE TEE DN
- PIPE TEE UP
- EXISTING SPRINKLER PIPING TO REMAIN
- EXISTING FOAM/WATER SOLUTION PIPING TO BE REMOVED
- NEW HIGH EXPANSION FOAM/WATER SOLUTION PIPING
- EXISTING PIPING/EQUIPMENT TO BE REMOVED
- PIPE RISER UP/DN
- UPRIGHT SPRINKLER HEAD TO BE REPLACED
- STRAINER
- GATE VALVE
- CHECK VALVE
- BALL VALVE
- REDUCER/INCREASER
- CONNECT NEW TO EXISTING
- FOAM ABORT BUTTON
- MANUAL ALARM PULL STATION
- MANUAL FOAM PULL STATION
- UV/IR DETECTOR
- HORN STROBE (ALARM)
- STROBE (FOAM)
- END OF LINE RESISTOR
- SMOKE DETECTOR
- HEAT DETECTOR
- INTERFACE MONITOR MODULE
- FLOW SWITCH
- TAMPER SWITCH
- HI EXPANSION FOAM SYSTEM
- FIRE SUPPRESSION CONTROL PANEL
- FIRE ALARM CONTROL PANEL

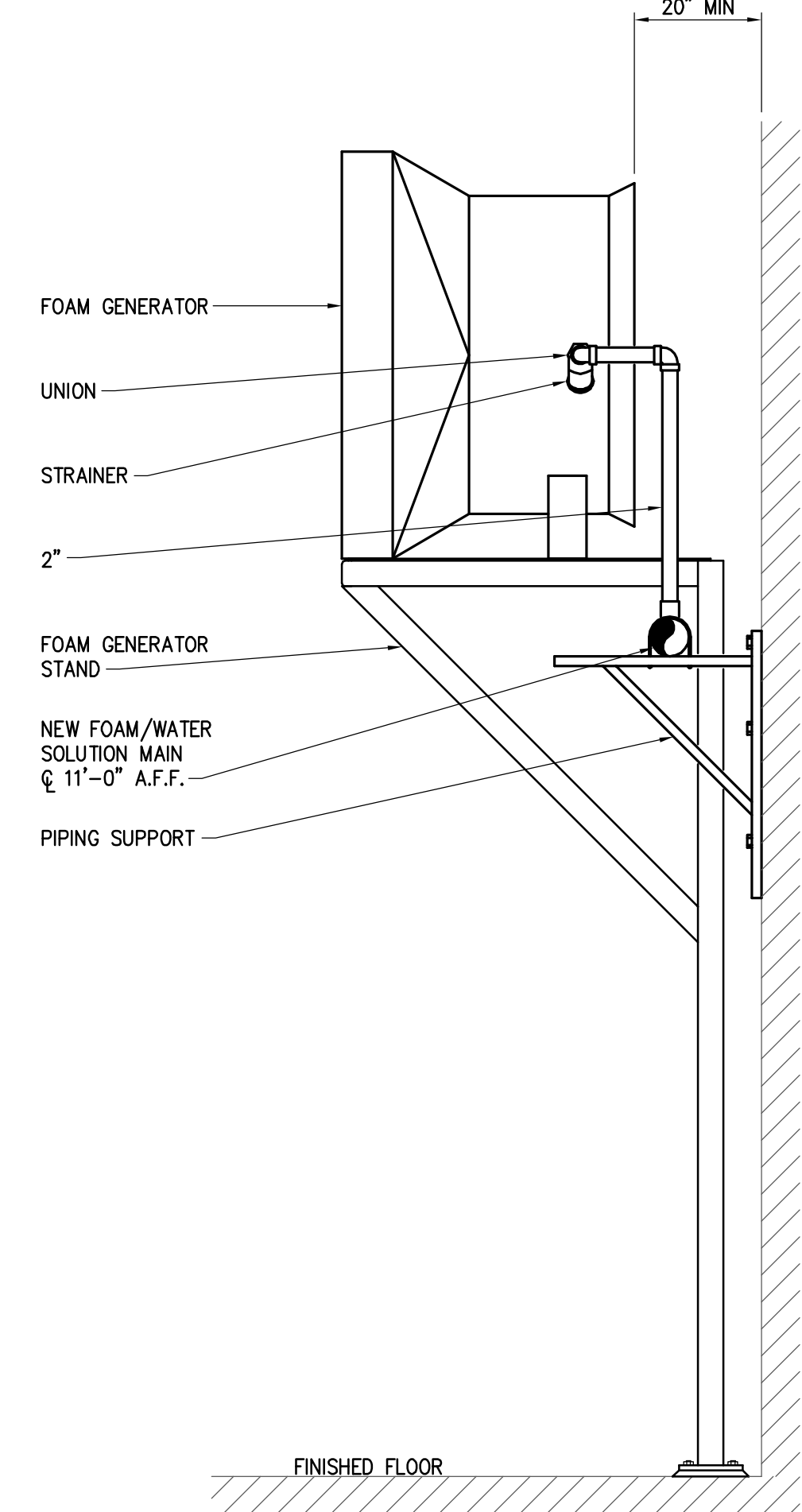
ABBREVIATIONS:

- A.F.F. ABOVE FINISHED FLOOR
- CFM CUBIC FEET PER MINUTE
- C.L. CENTER LINE
- DIA. DIAMETER
- DN DOWN
- DWG. DRAWING
- FACP FIRE ALARM CONTROL PANEL
- F/W FOAM/WATER
- Fy YIELD STRENGTH
- GPM GALLONS PER MINUTE
- HSS HOLLOW STRUCTURAL SECTION
- IR INFRARED
- MECH. MECHANICAL
- MILS THOUSANDTHS OF AN INCH
- MIN. MINIMUM
- MISC. MISCELLANEOUS
- NTS NOT TO SCALE
- PB PULL BOX
- PL. PLATE
- PSI POUNDS PER SQUARE INCH
- RM. ROOM
- TYP. TYPICAL
- UNO UNLESS NOTED OTHERWISE
- UV ULTRA VIOLET



FOAM GENERATOR PLAN DETAIL

SCALE: 3/8" = 1'-0"



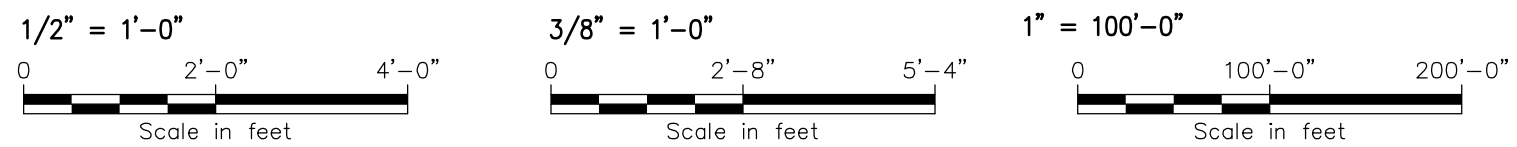
FOAM GENERATOR ELEVATION DETAIL

SCALE: 1/2" = 1'-0"

- SEE STRUCTURAL PLAN AND SECTION THIS DWG. FOR DIMENSIONS
- ATTACH FOAM GENERATOR TO STAND PER MANUFACTURER'S RECOMMENDATIONS

NOTES:

- ALL FIRE PROTECTION SYSTEM MODIFICATIONS SHALL BE PERFORMED IN ACCORDANCE WITH AIR NATIONAL GUARD ETL 01-1, AIR FORCE ETL 02-15, NFPA 409 AND NFPA 11A.
- THESE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO SHOW EVERY FITTING, OFFSET, ETC... CONTRACTOR IS RESPONSIBLE FOR COMPLETE CODE AND ETL COMPLIANT SYSTEMS.
- CONTRACTOR SHALL COORDINATE ALL WORK WITH BUILDING STRUCTURE AND EXISTING EQUIPMENT AND UTILITIES.
- CONTRACTOR SHALL CONDUCT A NEW HYDRANT FLOW TEST TO VERIFY WATER DATA. CONTRACTOR SHALL SUBMIT HYDRAULIC CALCULATIONS FOR THE NEW HIGH EXPANSION FOAM SYSTEM AND SUBMIT CALCULATIONS FOR THE RENOVATED OVERHEAD WET PIPE SPRINKLER SYSTEM TO VERIFY SYSTEM PERFORMANCE.
- PIPING SHALL BE SUPPORTED PER NFPA 13.
- PROVIDE SLEEVES ON ALL PIPING PENETRATIONS THROUGH WALLS AND FLOORS. SPACE BETWEEN PIPE AND SLEEVE SHALL BE SEALED TO A FIRE RATED CONDITION EQUAL TO OR GREATER THAN THE WALL/FLOOR THAT THE PIPING IS PENETRATING.
- ALL CONTRACTORS BIDDING WORK UNDER THIS CONTRACT ARE REQUIRED TO ATTEND A PRE-BID WALK THROUGH OF THE FACILITY.
- ALL EQUIPMENT FOR THE HIGH EXPANSION FOAM SYSTEM SHALL BE OF THE SAME MANUFACTURER.
- A FULL FLOW FOAM TEST SHALL BE CONDUCTED PER NFPA 409 AND ETL 01-1 TO VERIFY SYSTEM PERFORMANCE. CONTRACTOR IS TO PROTECT ALL HANGAR EQUIPMENT, SYSTEMS, SURFACES, ETC. THAT MAY BE AFFECTED BY THE TEST. CONTRACTOR SHALL SUPPLY ENOUGH EXTRA FOAM TO CONDUCT TEST AND SHALL REPLENISH CONCENTRATE SUPPLY IMMEDIATELY UPON COMPLETION OF THE TEST. CONTRACTOR SHALL COMPLETELY CLEAN FROM ALL SURFACES ANY FOAM/WATER RESIDUE LEFT FROM TEST. TRENCH DRAINS ARE TO BE FLUSHED TO REMOVE ALL RESIDUE. INLET STRAINERS ON GENERATORS SHALL BE DISASSEMBLED CLEANED AND RE-INSTALLED. GENERATORS AND PIPING SHALL BE FLUSHED.



Revisions:	Drawn By:	App'd. By:	Date:
ISSUED FOR BID			2/23/04
ISSUED FOR BID/ANG COMMENTS COMPLETE			5/11/04
ISSUED FOR BID/ANG COMMENTS COMPLETE			7/7/04

Designed By:	Date:
DMW	10/03
Drawn By:	Date:
DAG	10/03
Checked By:	Date:
JUT	10/03

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CHA Project No. 12388

STEWART AIR NATIONAL GUARD
NEWBURGH, NY
FOAM SYSTEM CONVERSION

HANGAR 301 HIGH EXPANSION FOAM SYSTEM

LEGEND, NOTES AND DETAILS

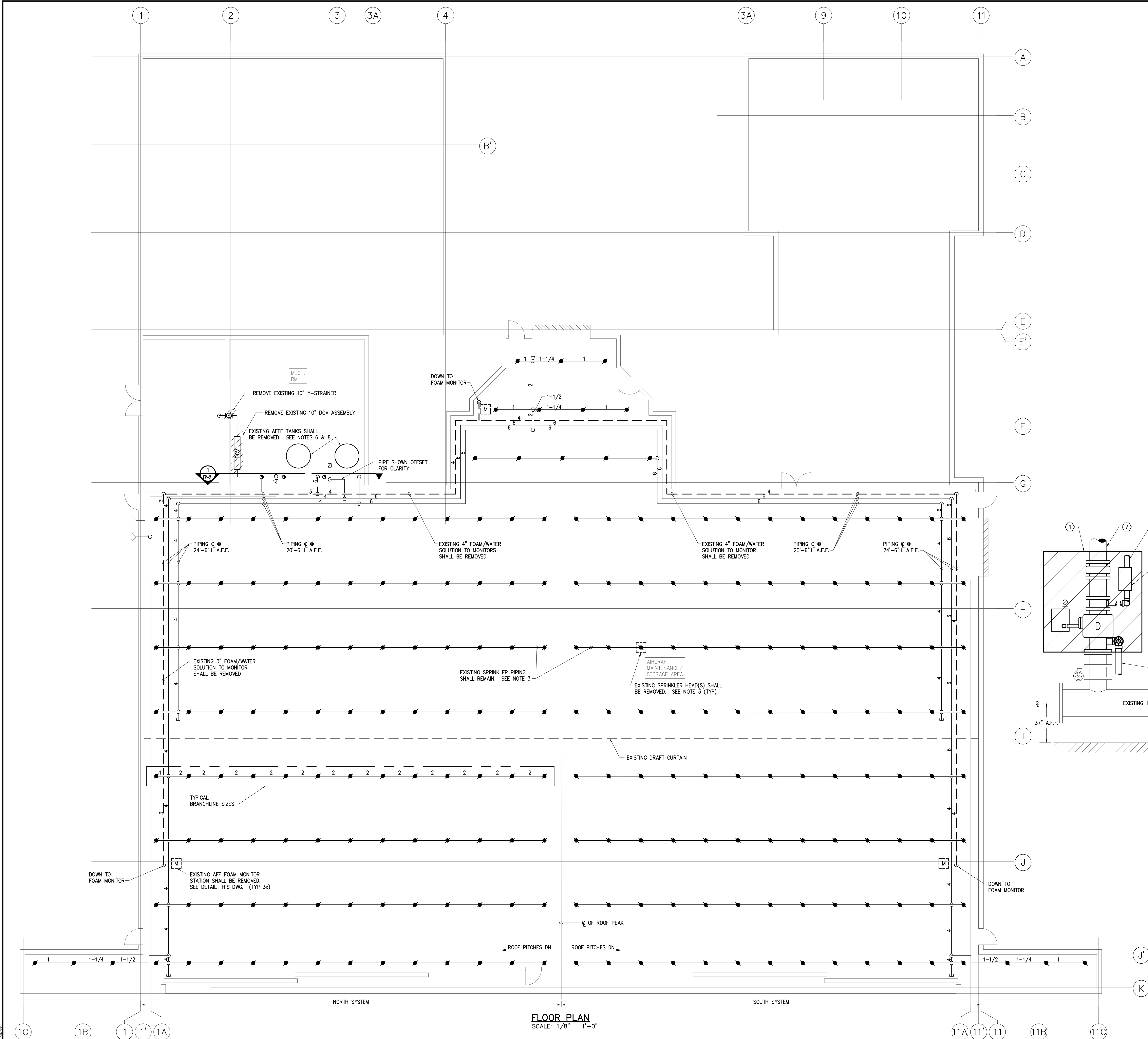
SCALE: AS SHOWN

DATE: JULY 2004

Drawing No.

FP-1

SHEET 2 OF 7

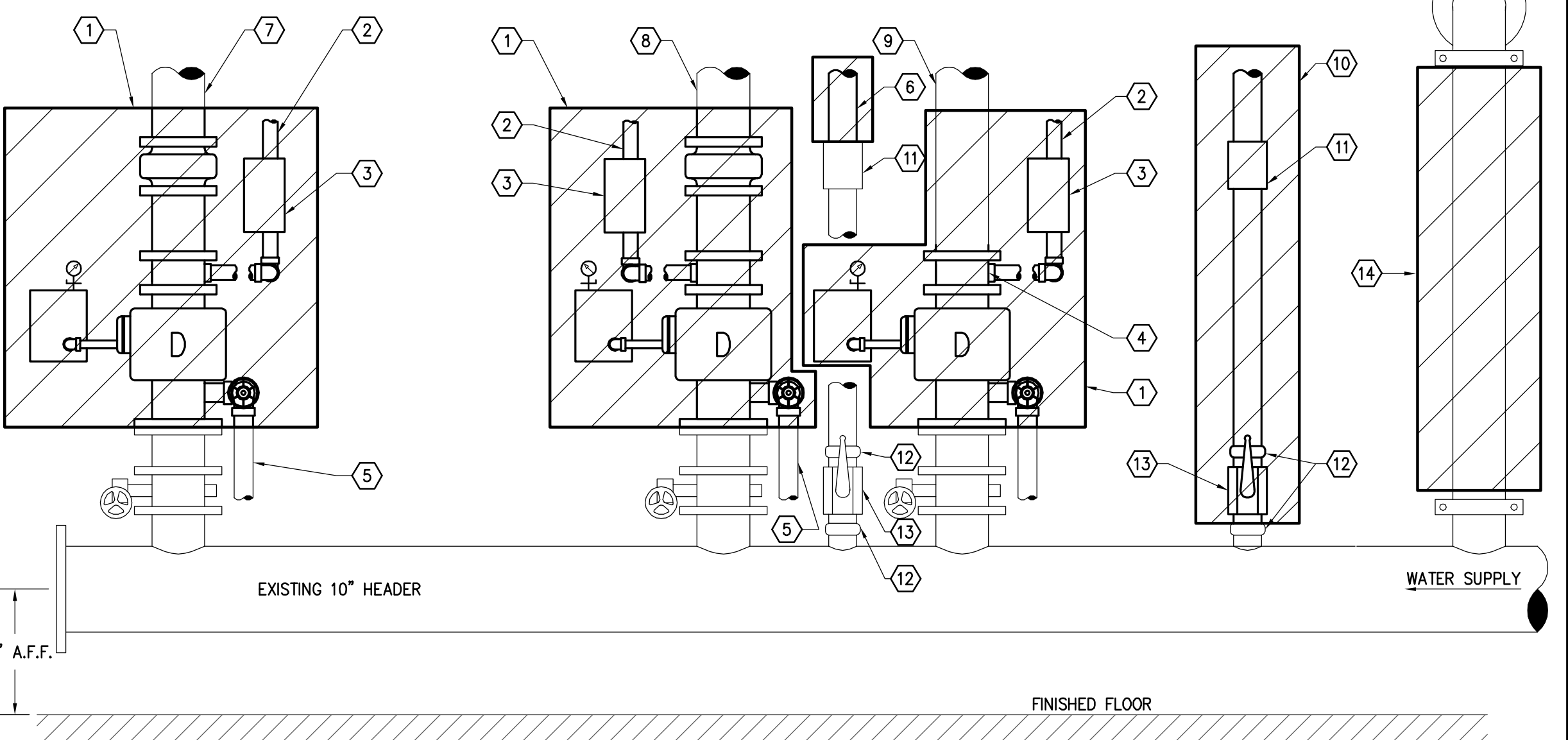


- DEMOLITION NOTES (GENERAL):**
1. FOAM/WATER SOLUTION SUPPLY PIPING TO FOAM MONITORS SHALL BE COMPLETELY REMOVED BACK TO MECHANICAL ROOM. PIPING IN MECH. RM. SHALL BE REMOVED BACK TO BUTTERFLY RISER CONTROL VALVE. EXISTING OS&Y CONTROL VALVE SHALL REMAIN.
 2. HOLES IN WALLS LEFT FROM REMOVED PIPING SHALL BE SEALED TO A FIRE RATED CONDITION EQUAL TO OR GREATER THAN THE EXISTING WALL.
 3. ALL SPRINKLER HEADS SHALL BE REMOVED. ALL EXISTING CEILING-LEVEL SPRINKLER PIPING SHALL REMAIN. CONTRACTOR SHALL COMPLETELY FLUSH ALL EXISTING SPRINKLER PIPING AND VERIFY PIPING IS UNOBSTRUCTED AND RE-USABLE FOR NEW WET PIPE WATER BASED SPRINKLER SYSTEM.
 4. EXISTING AFFF MONITORS AND ASSOCIATED PIPING SHALL BE COMPLETELY REMOVED. SEE DETAIL AND NOTES THIS DRAWING.
 5. EXISTING AFFF MONITOR SUPPLY PIPING SUPPORTS SHALL BE RE-USED IN NEW HIGH EXPANSION FOAM SYSTEM WHEREVER POSSIBLE. REMOVE ALL PIPING SUPPORTS THAT WILL NOT BE USED IN NEW SYSTEM.
 6. EXISTING AFFF BLADDER TANKS AND ASSOCIATED PIPING SHALL BE COMPLETELY REMOVED. TANKS SHALL BE COMPLETELY DRAINED OF AFFF CONCENTRATE. AFFF CONCENTRATE SHALL BE PROPERLY DISPOSED OF.
 7. ONE EXISTING BLADDER PRESSURIZATION RISER SHALL BE RE-USED IN NEW HIGH EXPANSION FOAM SYSTEM. ONE EXISTING BLADDER PRESSURIZATION RISER SHALL BE CAPPED. SEE SECTION 1 THIS DWG.
 8. EXISTING 1300 GALLON AFFF TANKS ARE APPROXIMATELY 13' TALL x 5' IN DIAMETER. CONTRACTOR SHALL CUT TANKS INTO PIECES SMALL ENOUGH TO FACILITATE REMOVAL FROM MECH. RM. CONTRACTOR SHALL COORDINATE ALL CUTTING OPERATIONS AND HOT WORK PERMITS WITH THE ANG.
 9. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER DISPOSAL OF ALL MATERIALS AND EQUIPMENT REQUIRED TO BE REMOVED. REMOVED EQUIPMENT/MATERIALS SHALL NOT BE STORED ON BASE.
 10. PIPE SIZES SHOWN ON EXISTING OVERHEAD SPRINKLER PIPING HAVE NOT BEEN FIELD VERIFIED AND ARE FOR INFORMATION ONLY.
 11. CONTRACTOR SHALL REMOVE ANY EXISTING WALL MOUNTED PIPING SUPPORT BRACKETS THAT ARE NOT BEING RE-USED FOR NEW PIPING.



TYP. MONITOR STATION DETAIL
SCALE: NOT TO SCALE

- NOTES:**
1. COMPLETELY REMOVE MONITOR, PIPING, STANDS, SUPPORTS, VALVES AND APPURTENANCES. SUPPLY PIPING SHALL BE REMOVED BACK TO MECHANICAL ROOM. SEE DEMOLITION NOTE 1.
 2. REMOVE ELECTRICAL WIRING BACK TO JUNCTION BOX ON WALL.



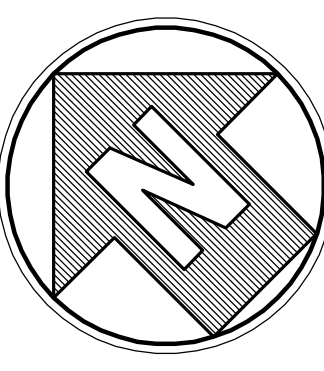
1 SUPPLY HEADER SECTION
TP-2
SCALE: NOT TO SCALE

- CODED DEMOLITION NOTES:**
- 1 REMOVE EXISTING DELUGE VALVES AND ALL APPURTENANCES ON PRE-ACTION RISERS.
 - 2 REMOVE EXISTING FOAM CONCENTRATE PIPING. SEE FLOOR PLAN THIS DWG. FOR ADDITIONAL REMOVALS
 - 3 REMOVE EXISTING FOAM CONCENTRATE SOLENOID VALVES
 - 4 REMOVE EXISTING PROPORTIONER AND ALL APPURTENANCES ON PRE-ACTION MONITOR RISER
 - 5 EXISTING 2" DRAIN RISER TO BE RE-USED
 - 6 REMOVE EXISTING 3" BLADDER PRESSURIZATION PIPING BACK TO EXISTING THREADED COUPLING
 - 7 EXISTING PRE-ACTION RISER (NORTH SYSTEM)
 - 8 EXISTING PRE-ACTION RISER (SOUTH SYSTEM)
 - 9 EXISTING PRE-ACTION MONITOR RISER
 - 10 REMOVE EXISTING 3" BLADDER PRESSURIZATION PIPING DN TO EXISTING VCTAULOC COUPLING
 - 11 EXISTING THREADED COUPLING
 - 12 VCTAULOC COUPLING
 - 13 EXISTING SUPERVISED BALL VALVE
 - 14 REMOVE EXISTING 6" FDC PIPE BACK TO GROOVED FITTING AT HEADER. CAP STUB AT HEADER

- DEMOLITION NOTES (GENERAL):**
1. SEE DWG. FP-3 FOR NEW WORK ON RISERS
 2. REMOVE FOAM FILL LINE AND AUXILIARY FILL PUMP

1/8" = 1'-0"
0 8'-0" 16'-0"
Scale in Feet

Revisions:	Drawn By:	App'd. By:	Date:
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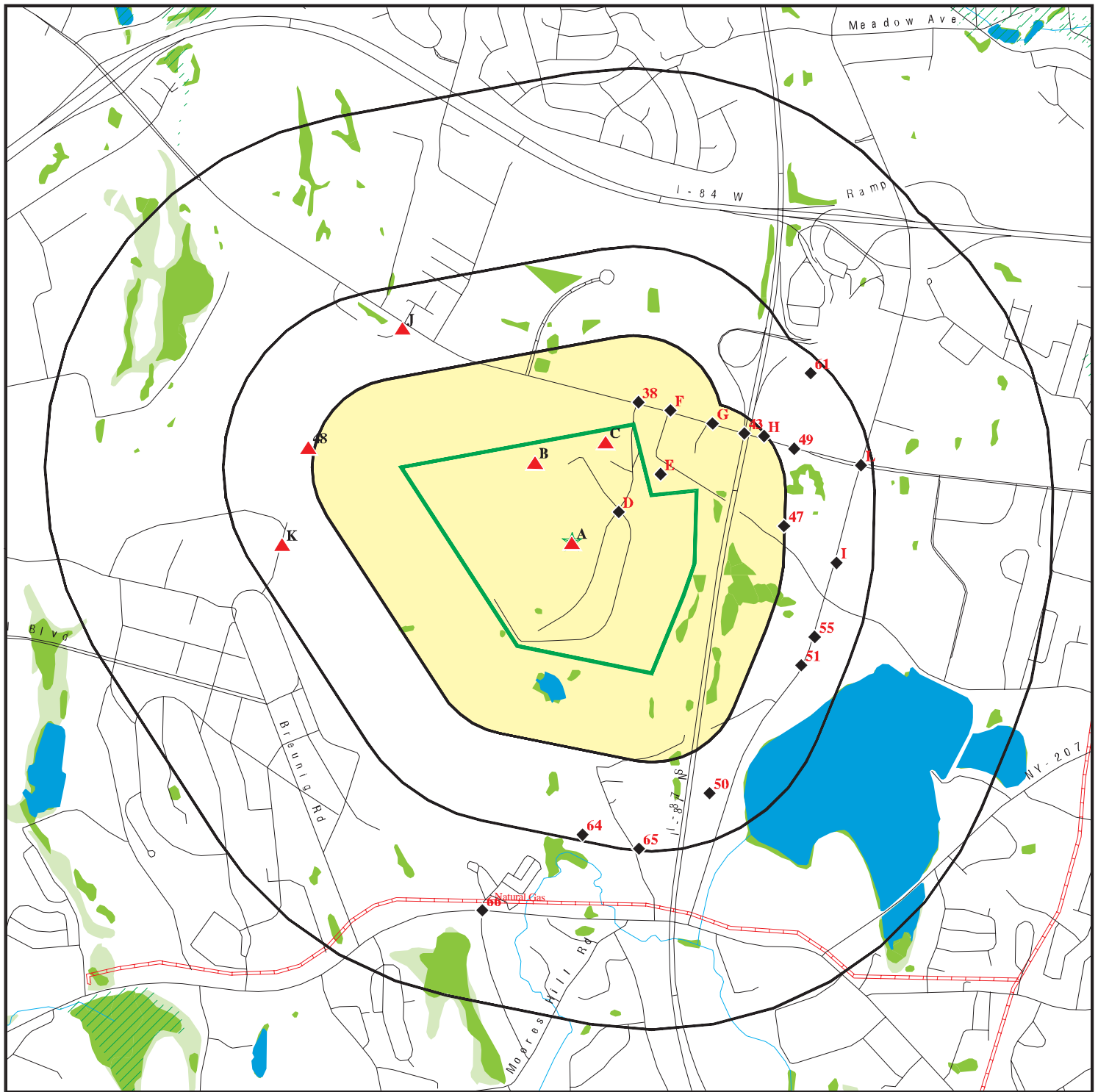
STEWART AIR NATIONAL GUARD
NEWBURGH, NY
FOAM SYSTEM CONVERSION

HANGAR 301 HIGH EXPANSION FOAM SYSTEM		Drawing No. FP-2
AFFF DEMOLITION PLAN		
SCALE: AS NOTED	DATE: JULY 2004	SHEET 3 OF 7

APPENDIX C-4

EDR ONE-MILE RADIUS WATER WELLS MAP

OVERVIEW MAP - 4491707.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

Indian Reservations BIA

Pipelines

100-year flood zone

500-year flood zone

National Wetland Inventory

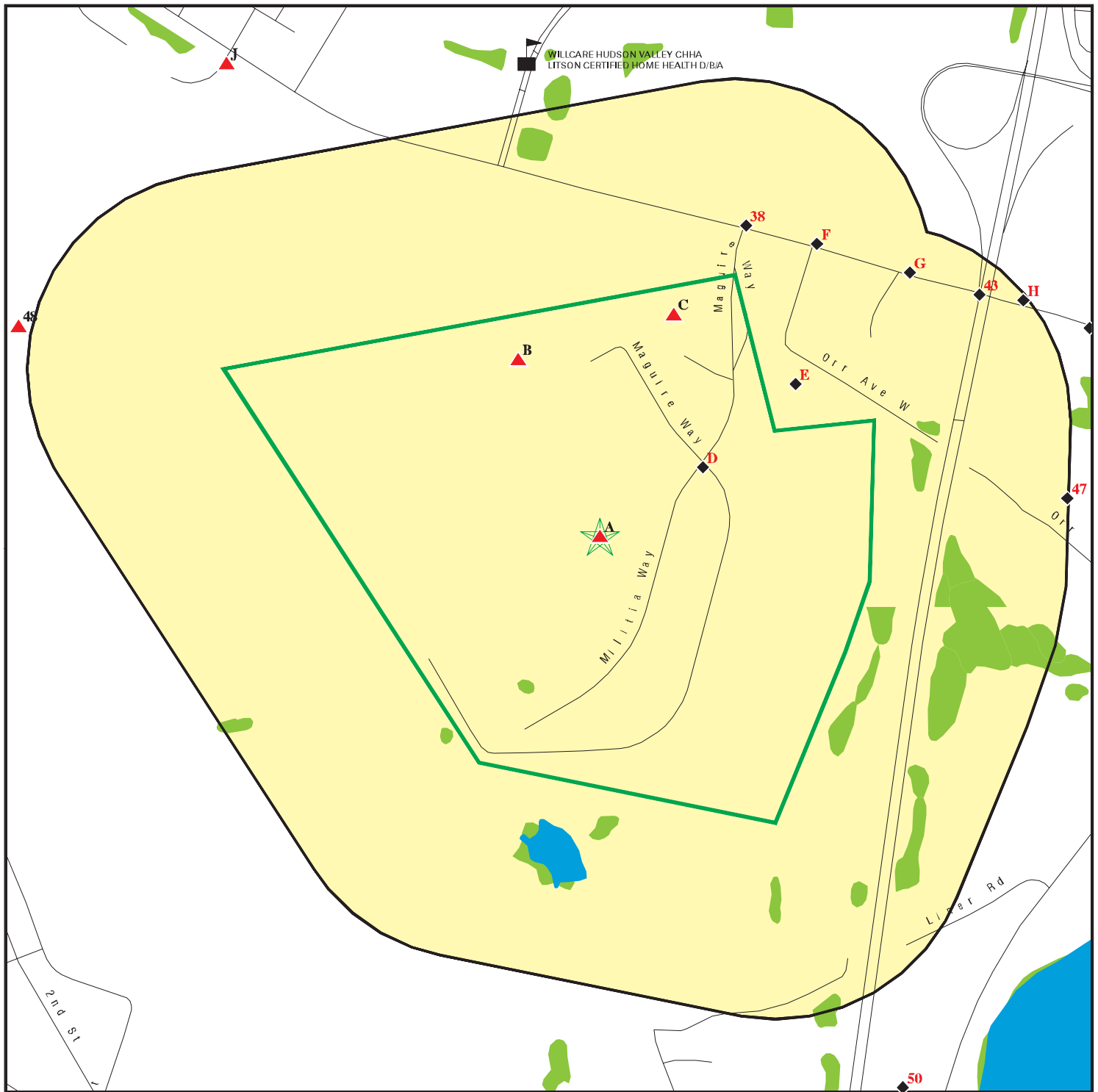
State Wetlands








This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Stewart ANGB
ADDRESS: 1 Maguire Way
Newburgh NY 12550
LAT/LONG: 41.5014 / -74.0849

CLIENT: B.B. & E
CONTACT: Veronica Allen
INQUIRY #: 4491707.2s
DATE: December 15, 2015 9:51 am

DETAIL MAP - 4491707.2S



-  Target Property
-  Sites at elevations higher than or equal to the target property
-  Sites at elevations lower than the target property
-  Manufactured Gas Plants
-  Sensitive Receptors
-  National Priority List Sites
-  Dept. Defense Sites

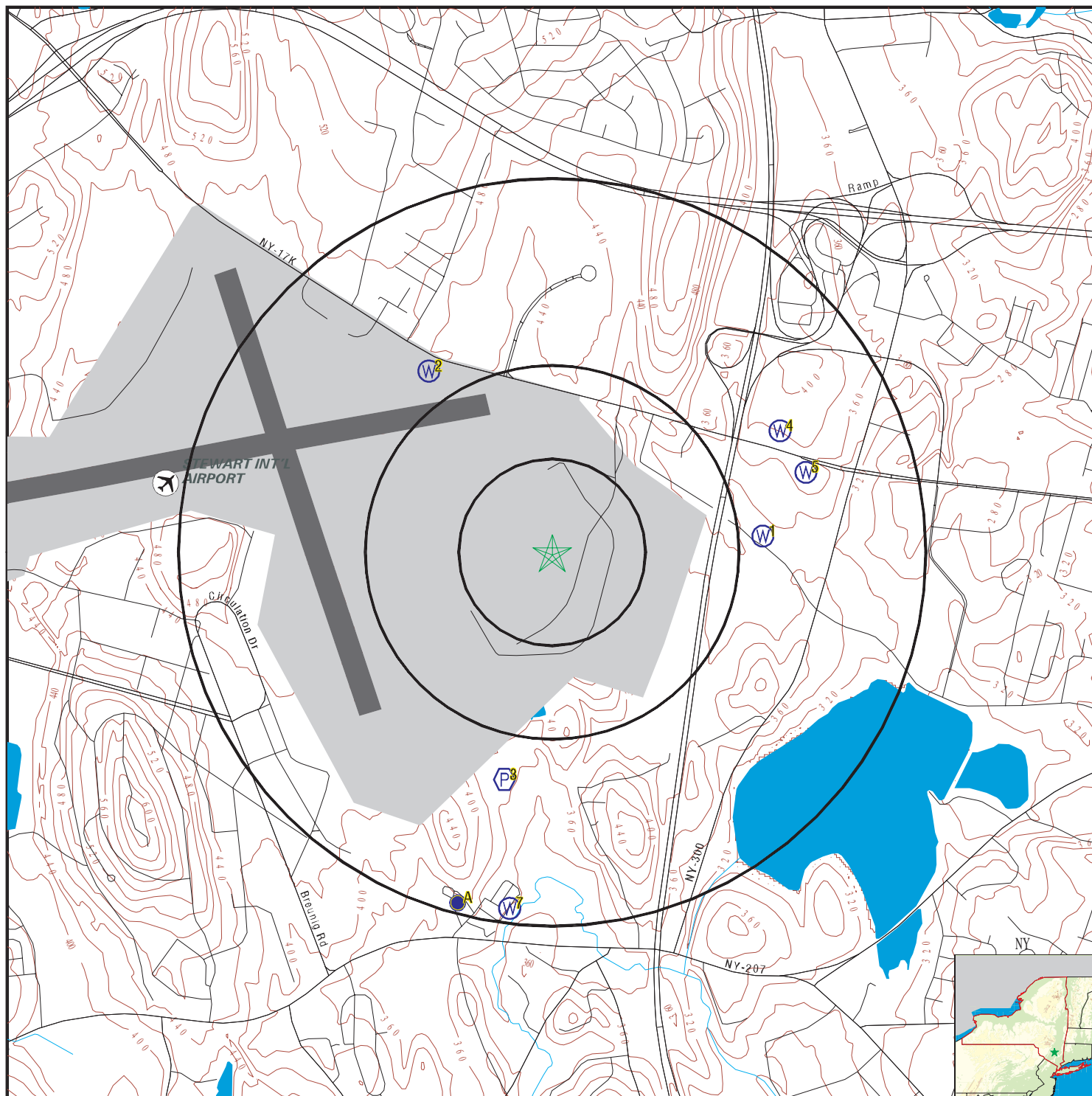
-  Indian Reservations BIA
-  100-year flood zone
-  500-year flood zone
-  National Wetland Inventory
-  State Wetlands

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

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 ADDRESS: 1 Maguire Way
 Newburgh NY 12550
 LAT/LONG: 41.5014 / -74.0849

CLIENT: B.B. & E
 CONTACT: Veronica Allen
 INQUIRY #: 4491707.2s
 DATE: December 15, 2015 9:52 am

PHYSICAL SETTING SOURCE MAP - 4491707.2s



- County Boundary
- Major Roads
- Contour Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME: Stewart ANGB
 ADDRESS: 1 Maguire Way
 Newburgh NY 12550
 LAT/LONG: 41.5014 / -74.0849

CLIENT: B.B. & E
 CONTACT: Veronica Allen
 INQUIRY #: 4491707.2s
 DATE: December 15, 2015 9:53 am

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

<u>DATABASE</u>	<u>SEARCH DISTANCE (miles)</u>
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
2	USGS40000844323	1/2 - 1 Mile NW
7	USGS40000844176	1/2 - 1 Mile South
A9	USGS40000844177	1/2 - 1 Mile SSW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
3	NY0003549	1/2 - 1 Mile SSW

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

<u>MAP ID</u>	<u>WELL ID</u>	<u>LOCATION FROM TP</u>
1	NYWS10000009764	1/2 - 1 Mile East
4	NYWS10000009763	1/2 - 1 Mile ENE
5	NYWS10000009743	1/2 - 1 Mile ENE
A6	NYWS004631	1/2 - 1 Mile SSW
A8	NYWS004634	1/2 - 1 Mile SSW

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database EDR ID Number

1
East
1/2 - 1 Mile
Lower

NY WELLS NYWS10000009764

Fid: 9764
County: ORANGE
Town: Newburgh
Dec well n: O6295
Foil loc: ORR RD
Latitude: 41 30 07.3
Longitude: 74 04 26.5
Well depth: 93
Rock depth: 61
Gw depth: 20
Cased dept: 91
Scr: N
Yt avgdisc: 10
Regnumber: NYRD10121
Ddlat: 41.502028
Ddlong: -74.074028
Site id: NYWS10000009764

2
NW
1/2 - 1 Mile
Higher

FED USGS USGS40000844323

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-413030074053001		
Monloc name:	O1209		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	02020008	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	41.5084271
Longitude:	-74.0912546	Sourcemap scale:	62500
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	465.00
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Paleozoic Erathem		
Aquifer type:	Not Reported		
Construction date:	Not Reported		
Welldepth units:	ft	Welldepth:	119
Wellholedepth units:	Not Reported	Wellholedepth:	Not Reported

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

Database EDR ID Number

3
SSW
1/2 - 1 Mile
Lower

FRDS PWS NY0003549

PWS ID: NY0003549
Date Initiated: Not Reported Date Deactivated: Not Reported
PWS Name: NEWBURGH CITY
CITY HALL, 83 BROADWAY
NEWBURGH, NY 12550

Addressee / Facility: System Owner/Responsible Party
DAMIANO ANDREW J
CITY OF NEWBURGH
CITY HALL, 83 BROADWAY
NEWBURGH, NY 12550

Facility Latitude: 41 29 33 Facility Longitude: 074 05 16
Facility Latitude: 41 29 33 Facility Longitude: 074 04 00
City Served: NEWBURGH
Treatment Class: Not Reported Population: Not Reported

Violations information not reported.

4
ENE
1/2 - 1 Mile
Lower

NY WELLS NYWS10000009763

Fid: 9763
County: ORANGE
Town: Newburgh
Dec well n: O6121
Foil loc: RT 17K
Latitude: 41 30 22.0
Longitude: 74 04 23.3
Well depth: 200
Rock depth: 25
Gw depth: 30
Cased dept: 40
Scr: N
Yt avgdisc: 20
Regnumber: NYRD10118
Ddlat: 41.506111
Ddlong: -74.073139
Site id: NYWS10000009763

5
ENE
1/2 - 1 Mile
Lower

NY WELLS NYWS10000009743

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Fid: 9743
 County: ORANGE
 Town: Newburgh
 Dec well n: O4396
 Foil loc: N/A
 Latitude: 41 30 16.2
 Longitude: 74 04 18.5
 Well depth: 303
 Rock depth: 85
 Gw depth: 30
 Cased dept: 94
 Scr: N
 Yt avgdisc: 10
 Regnumber: NYRD10063
 Ddlat: 41.5045
 Ddlong: -74.071806
 Site id: NYWS10000009743

A6
SSW
1/2 - 1 Mile
Lower

NY WELLS NYWS004631

Well Id: NY3530043	System name: HIGHLAND LAKE ESTATES
System Id: 002	Well name: WELL #2
Type: Well	Active?: Active
County: ORANGE COUNTY	Latitude: 412917 000
Longitude: 740524 000	Slec_type_: AC
Agency: SHACK, BARTON	
Address: STRATEGIC RESOURCES CORP. CARNEGIE HALL TOWER,152 W. 57thST.,44FLR	
City/State/Zip: NEW YORK CITY NY 10019	
Phone: Not Reported	

7
South
1/2 - 1 Mile
Lower

FED USGS USGS40000844176

Org. Identifier: USGS-NY	
Formal name: USGS New York Water Science Center	
Monloc Identifier: USGS-412915074051501	
Monloc name: O1183	
Monloc type: Well	
Monloc desc: Not Reported	
Huc code: 02020008	Drainagearea value: Not Reported
Drainagearea Units: Not Reported	Contrib drainagearea: Not Reported
Contrib drainagearea units: Not Reported	Latitude: 41.4875938
Longitude: -74.0870878	Sourcemap scale: 62500
Horiz Acc measure: 1	Horiz Acc measure units: seconds
Horiz Collection method: Interpolated from map	
Horiz coord refs: NAD83	Vert measure val: 365.00
Vert measure units: feet	Vertacc measure val: 1
Vert accmeasure units: feet	
Vertcollection method: Interpolated from topographic map	
Vert coord refs: NGVD29	Countrycode: US
Aquifername: Not Reported	
Formation type: Paleozoic Erathem	

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Aquifer type:	Not Reported	Welldepth:	176
Construction date:	Not Reported	Wellholedepth:	Not Reported
Welldepth units:	ft		
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

A8
SSW
1/2 - 1 Mile
Lower

NY WELLS **NYWS004634**

Well Id:	NY3530043	System name:	HIGHLAND LAKE ESTATES
System Id:	003	Well name:	WELL #3
Type:	Well	Active?:	Active
County:	ORANGE COUNTY	Latitude:	412916 000
Longitude:	740522 000	Slec_type_:	AC
Agency:	SHACK, BARTON		
Address:	STRATEGIC RESOURCES CORP. CARNEGIE HALL TOWER,152 W. 57thST.,44FLR		
City/State/Zip:	NEW YORK CITY NY 10019		
Phone:	Not Reported		

A9
SSW
1/2 - 1 Mile
Lower

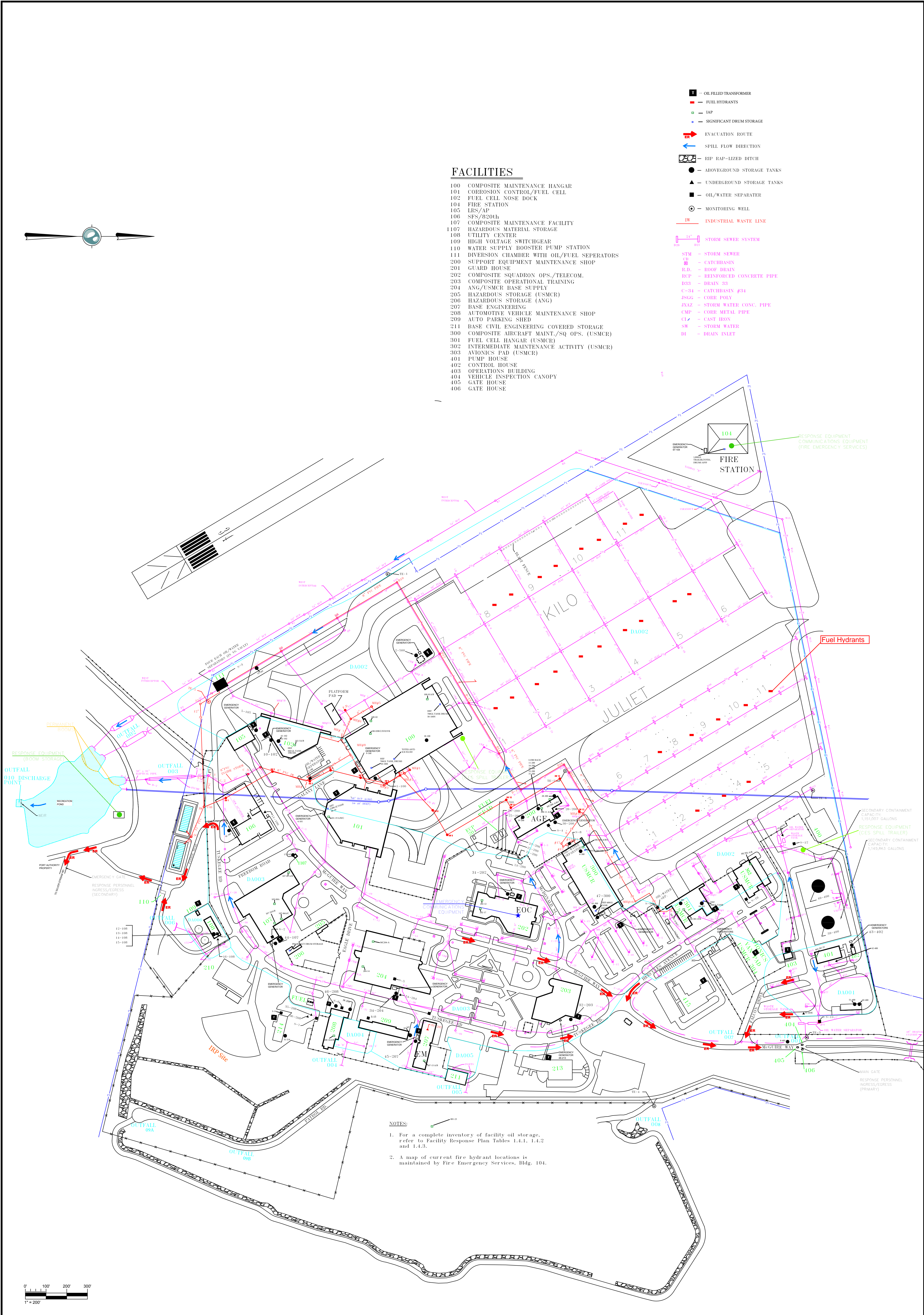
FED USGS **USGS40000844177**

Org. Identifier:	USGS-NY		
Formal name:	USGS New York Water Science Center		
Monloc Identifier:	USGS-412915074052501		
Monloc name:	O1184		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	02020008	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	41.4875938
Longitude:	-74.0898657	Sourcemap scale:	62500
Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	380.00
Vert measure units:	feet	Vertacc measure val:	1
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	Not Reported		
Formation type:	Paleozoic Erathem		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	145
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 0

APPENDIX C-5

BASE STORM DRAINAGE SYSTEM



CLIENT LOGO	CLIENT	DWN BY:	MEH	PROJECT	REV. NO.: FINAL
	NEW YORK AIR NATIONAL GUARD, STEWART INTERNATIONAL AIRPORT NEWBURGH, NY	CHK'D BY:	TM	105TH AIRLIFT WING	DATE:
					JANUARY 2013
		DATUM:		TITLE	PROJECT NO:
		PROJECTION:		FACILITY RESPONSE PLAN DIAGRAM	FIGURE No.
		SCALE:	AS SHOWN		
					1